INTERNATIONAL SOCIETY OF HAIR RESTORATION SURGERY

HAIR TRANSPLANT forum INTERNATIONAL

Volume 24
Number 2
March/April
2014

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2014 Anual Scientific Meeting
NEW VENUE & DATE!



CALL FOR ABSTRACTS
Deadline: April 16, 2014

The Art and Craft of Recipient Site Creation and Graft Placement

Bradley R. Wolf, MD *Cincinnati, Ohio, USA* wolf@wolfhair.com

The hair transplantation process consists of two parts: 1) removing the donor follicles, and 2) placing them back into the skin. Both are rate-limiting steps of the process. The patient pays a great price, monetarily, for us to do both of these tasks. If done properly, however, he or she need not pay a large price in sacrificed follicles. Much is said and written about the first part, follicle removal from the donor area. In the most recent meetings of the ISHRS, much time has been spent on the removal process, debating the merits and disadvantages of follicle removal using strip versus FUE. In this article I will discuss the other and equally important half of the procedure, the process of replacing the follicles into the skin.

Traditionally, physicians make the recipient sites into which grafts are placed. I have heard of unlicensed medical assistants doing this task. In the state of Ohio, where I practice, making an incision is the practice of medicine and cannot be delegated to an unlicensed assistant.[1] If medical assistants made recipient sites in Ohio, they would be committing a felony—the unlicensed practice of medicine—while the physician would be guilty of aiding and abetting the unlicensed practice of medicine, also a felony. If there are questions about the delegation of medical tasks in your jurisdiction, I suggest you consult your local medical authority.

Traditionally, medical assistants place grafts into the skin, most commonly, the scalp. Although this task can legally be delegated in most jurisdictions, that doesn't diminish the importance of this process—returning the follicles to the skin. It isn't difficult to get hair to grow in the fertile scalp; however, much care must be taken to approach cosmetic density and leave the scalp surface unaltered and normal in appearance. Grafts must be placed into recipient sites; making of the recipient sites greatly influences the success of the placement.

If recipient sites are perfectly made, good placing can make up for bad cutting, while good cutting cannot make up for bad placing. If the follicle is intact from skin to dermal papilla, but the graft is irregularly shaped, too big, or too small, good placing can salvage these follicles. If the follicles are not intact due to poor cutting, good placing cannot salvage follicles.

Over the years that I have performed hair transplant surgery, I've noticed a wide range in the quality of graft placement. I've observed physicians who take the utmost care in removing and preserving follicles only to hand them off to placers who leave them half hanging out of the scalp with little chance of survival. I've talked with physicians about differential graft placement (assessing every follicle in every graft and placing the graft in the scalp where it would have the greatest positive effect) asking them if their placers do this, only to be met with blank stares. While I have placed many grafts over the years, over the past four years, I began placing approximately half the grafts myself in every case. My only other assistant, who has worked with me for over 13 years, places the remaining grafts. While spending many hours making incisions and placing grafts, I have had time to contemplate and comprehend the smallest details, subtleties, and finesse necessary to get excellent growth and natural results. In so doing, I have made the observations and developed the theories described below.



Figure 1. A: (top left) 12 days post-op: 3,000 grafts; B: (top right) 12 days post-op: 3,000 grafts; C: (bottom left) 1 year post-op: 3,000 grafts; D: (bottom right) 1 year post-op: 3,000 grafts

With each surgery, my goals are: 1) 100% growth of placed follicles, 2) natural distribution of transplanted follicles, 3) natural growth angles, 4) unaltered scalp surface after healing (do no harm), and 5) the best results possible (Figure 1). To reach these goals, I have found

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Hair Transplant Forum International
Volume 24, Number 2

Hair Transplant Forum International is published bi-monthly by the International Society of Hair Restoration Surgery, 303 West State Street, Geneva, IL 60134 USA. First class postage paid at Chicago, IL and additional mailing offices. POSTMASTER: Send address changes to Hair Transplant Forum International, International Society of Hair Restoration Surgery, 303 West State Street, Geneva, IL 60134 USA. Telephone: 1-630-262-5399, U.S. Domestic Toll Free: 1-800-444-2737; Fax: 1-630-262-1520.

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President's Message

Vincenzo Gambino, MD *Milan, Italy*
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By now, you have all received notice that the 2014 Annual Scientific Meeting has been moved from Bangkok. This decision was not taken lightly and came as a result of the political unrest centered in that city and having no peaceful resolution on the horizon. We were able to cancel our contract with no penalty and have relocated the meeting to Kuala Lumpur. I thank all of you who have written to me with your concerns and suggestions. Please know your voices were heard.

I apologize to those who may be inconvenienced by the change, but I hope you understand the safety of our members and exhibitors was foremost in our considerations. The change of venue will in no way compromise the quality of the meeting, and I look forward to welcoming all of you in Kuala Lumpur.

Every three years, the ISHRS Board of Governors and its past presidents hold a Strategic Planning Meeting. The purpose of this meeting is to look at the big picture going forward and navigate the Society in a manner that best serves our members, our patients, and the practice of hair restoration. I have just come back from this meeting and want to tell you the Board of Governors' response to what we feel is a very real threat to our field.

In my last message, I expressed our alarm with technician-organized hair restoration practices that offered doctors untrained in hair restoration a "turnkey" business opportunity. Their offer begins with consultations, consent forms, medical supplies, and surgical procedures, and ends with follow-up care.

Equally concerning are hair restoration surgeons allowing their non-licensed personnel to perform surgical procedures.

We cannot stand by and allow these practices to continue if we are to protect our patients' care and safety.

If you go to the ISHRS website, you will see our clear position statement: http://www.ishrs.org/content/qualifications-scalp-surgery.

To be as concise as possible: The person responsible for the procedure is the physician. The physician should learn and supervise each stage of the surgery. The assistant is only to assist and help the surgeon. The surgical assistant should never incise the skin. During an FUE procedure, the assistant may pluck out the graft already incised or punched under the supervision of the physician.

These guidelines are established to be in the best interest of the patient. The Board of Governors intends to enforce this policy. Anyone who does not follow the guidelines as stated will be subject to membership sanctions.

In future messages, I will write about other policy changes that the Board of Governors will present to the general membership at the annual meeting. Know that our focus is achieving and maintaining the highest standard for the specialty of hair transplantation surgery and helping our members achieve that goal.◆

ISHRS Position Statement on Qualifications for Scalp Surgery

The position of the International Society of Hair Restoration Surgery is that any procedure involving a skin incision for the purpose of tissue removal from the scalp or body, or to prepare the scalp or body to receive tissue, by any means, is a surgical procedure and must be performed by a licensed physician in the field of medicine. Physicians who perform hair restoration surgery must possess the education, training, and current competency in the field of hair restoration surgery. It is beyond the scope of practice for non-licensed personnel to perform surgery. Surgical removal of tissue by non-licensed medical personnel may be considered practicing medicine without a license by state, federal or local governing boards of medicine. The Society supports the scope of practice of medicine as defined by a physician's state, country or local legally governing board of medicine.

Co-editors' Messages



Mario Marzola, MBBS *Adelaide, South Australia* editors@ISHRS.org

This is our second edition as editors of the *Forum*. Time is flying by. Each issue requires more articles of interest from our members, so please keep sending in your thoughts, findings, and experience. Dr. Bob True and I are very interested in international contributions and broadening the input of this magazine. Many countries around the world are embracing hair restoration surgery quite quickly, so there must be growing pains! Share with us any issue, problem, or complication—anything that concerns you. You can be certain that some of us have experienced the same problems and would be able to help you. You can also be certain that it will be a pleasure to help, as the spirit of collegiality in the ISHRS is alive and well. A letter to the editors is a good and easy way to start: editors@ISHRS.org.

It's a good sign when there are so many meetings happening around the world, more than ever before. Hair restoration, medical and surgical, is also alive and well. With the increasing interest from the public, it's good to see that we as doctors are seeking to educate ourselves to deliver the best results for them. Dr. David Perez-Meza is doing a sterling job with his helpers in reporting on these meetings for this journal.

One area of hair restoration that I find fascinating is the Hair Sciences. Where is this field heading? Hair restoration surgery is much more gentle now than when I started in this field 35 years ago. Through all the stages and changes, one thing has been constant, and that is the search for better outcomes for our patients. Trends towards less surgery, less scars, less pain, and less down time make patients happy. Where do we go after the minimal surgery of FUT and FUE? Will it be PRP, stem cells, cloning, or some other yet to be discovered modality? In this issue's Hair Sciences column, Dr. Jerry Cooley brings the thoughts together in a very readable manner. Read how the availability of "folliculogenic" cells may be endless. As always, it is all couched in terms of much more research needs to happen before any of this knowledge can be clinically useful. Next May in Korea there will be another World Congress for Hair Research meeting where all manner of scientists and clinicians interested in hair research will meet for four days. I am looking forward to attending this meeting. Though some of the presentations will be too scientific to understand, all will need absolute concentration to stay with the presenters, and at the end we will all be totally exhausted, I can't think of a better way to spend four days!◆



Robert H. True, MD, MPH *New York, New York, USA* editors@ISHRS.org

This issue's lead article and columns highlight the critical importance of recipient site creation and graft placement. In his wonderfully detailed article, Dr. Brad Wolf rightly points out that we spend so much of our time discussing graft harvesting and production that placement is overlooked. Attention to small details in site creation and graft placement is necessary to produce the best results. My approach is very similar to Dr. Wolf's; I measure grafts in every case, and test and adjust site size and depth as I begin making sites and throughout the recipient process. I also believe that Dr. Wolf's recommendation to use high power loupes for graft placement is worthy of adaptation by all practitioners. I always hear practitioners and technicians say that they can see perfectly clearly for placing without magnification, but the truth is everyone sees more detail with magnification, and seeing more detail allows more accurate and atraumatic graft placement.

Again in this issue, we see a complication in a smoker. In the last issue it was donor site necrosis in FUE and this time recipient area necrosis. The only time I ever had a recipient area central necrosis in my lengthy experience was in a heavy smoker who just would not stop or reduce his smoking despite my admonition. There might have been technical factors that contributed to these cases, but I am convinced smoking was the primary factor. I have reached the point that unless I can get the person to stop smoking or at least reduce to minimum consumption (5 or less per day), I will only do the surgery if the patient signs a release acknowledging that there may be poor healing and suboptimal results. I do refer all smokers to their primary physicians for assistance in smoking cessation programs.

Dr. Rogers's review of the literature in this issue caught my attention. It appears that there is justification for my practice of telling patients when prescribing finasteride that there typically is not an effect on fertility, but that if a conception issue did arise in a couple, the fertility specialists might recommend suspension of the drug.

I want to thank Ailene Russell, NCMA, Dr. Bill Parsley, and Dr. Greg Williams for their perspectives in this issue on the role and contributions of surgical assistants. The approach to codify the ethics and conduct of surgical assistants, specifically Hair Transplant Surgical Assistants, in the UK is remarkable in its clarity and should be emulated everywhere. As Dr. Gambino emphasizes in his highlighting of the ISHRS position paper, licensed qualified medical doctors, not unlicensed technicians, must do hair restoration surgery. At the same time, as both Ailene Russell and Dr. Parsley so eloquently convey, we need and greatly value the participation and contributions of our nurses and technicians to our individual practices and to our profession. As a current editor of the *Forum*, while I fully support efforts to end the alarming practice of surgery by unlicensed technicians, it is my desire to continue to include papers and contributions from our non-physician members.

Dr. Marzola and I are really enthusiastic about the opportunity that the Regional Society Profiles presents for us all to get to know our global membership better, and we want to thank last issue's Dr. Franco Buttafarro (January/February 2014, p. 30) and this issue's Dr. Sandeep Sattur for their interviews.◆

INTERNATIONAL SOCIETY OF HAIR RESTORATION SURGERY

Vision: To establish the ISHRS as the leading unbiased authority in hair restoration surgery.
Mission: To achieve excellence in patient outcomes by promoting member education, international collegiality, research, ethics, and public awareness.

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1. Articles should be written with the intent of sharing scientific information with the purpose of progressing the art and science of hair restoration and benefiting patient outcomes.
2. If results are presented, the medical regimen or surgical techniques that were used to obtain the results should be disclosed in detail.
3. Articles submitted with the sole purpose of promotion or marketing will not be accepted.
4. Authors should acknowledge all funding sources that supported their work as well as any relevant corporate affiliation.
5. Trademarked names should not be used to refer to devices or techniques, when possible.
6. Although we encourage submission of articles that may only contain the author's opinion for the purpose of stimulating thought, the editors may present such articles to colleagues who are experts in the particular area in question, for the purpose of obtaining rebuttal opinions to be published alongside the original article. Occasionally, a manuscript might be sent to an external reviewer, who will judge the manuscript in a blinded fashion to make recommendations about its acceptance, further revision, or rejection.
7. Once the manuscript is accepted, it will be published as soon as possible, depending on space availability.
8. All manuscripts should be submitted to editors@ishrs.org.
9. A completed Author Authorization and Release form—sent as a Word document (not a fax)—must accompany your submission. The form can be obtained in the Members Only section of the Society website at www.ishrs.org.
10. All photos and figures referred to in your article should be sent as separate attachments in JPEG or TIFF format. Be sure to attach your files to the email. Do NOT embed your files in the email or in the document itself (other than to show placement within the article).
11. We CANNOT accept photos taken on cell phones.
12. Please include a contact email address to be published with your article.

Submission deadlines:
April 5 for May/June 2014 issue
June 5 for July/August 2014 issue



CALL FOR ABSTRACTS

Go to: www.ishrs.org/AnnualMeeting.html

for access to the submission site and instructions

Deadline: April 16, 2014

Notes from the Editor Emeritus



William M. Parsley, MD *Louisville, Kentucky, USA* parsley@bellsouth.net

This column will address a difficult issue that the ISHRS has been dealing with recently. Unlicensed, unaffiliated techs have been contracting their services to new or mostly unskilled physicians where they essentially perform most if not all of the hair restoration procedure, most commonly via an automated suction device machine for follicular unit extraction (FUE), but sometimes with the strip method as well. In most states and countries, this is considered unethical and usually malpractice or the crime of practicing medicine without a license. The possible dangers to the patients and to our field are obvious, forcing the ISHRS to respond quickly to not only protect unwitting patients but also to protect the integrity of our field.

Hair transplant physicians have always relied on skilled technicians to assist their procedures to ensure quality results. This was true even during the early days of the large rounds grafts and also true with rotation flaps and scalp reductions. During the advent of mini-grafts from strips and dissected round grafts, the need for skilled assistants escalated, but with the development of stereomicroscopically assisted follicular unit transplantation (FUT) via strip, the need dramatically increased, both in number of assistants and the skill level. This need became a significant problem for newcomers to our field, causing some to drop out and others to try to entice already skilled assistants to leave their current practice to work for them. In response, the ISHRS began to increase the educational programs for assistants at the meetings and also to consider training schools. As FUE developed, the need for a large number of assistants decreased. With the strip method, considerable staffing was needed to assist the donor removal and repair, the graft dissection into follicular units, and the graft placement, but with FUE the main need is for graft placement. One of the greatest obstacles with FUE is that the learning curve for the physician can be quite long in producing quality grafts.

So what is the problem? One of the problems is that now the obstacle for a physician new to the field is not so much accumulating skilled assistants as it is going through the long learning curve. Many physicians new to FUE might think that simply extracting grafts with a small punch is simple and not appreciate the considerable skill involved. While most physicians can quickly learn to remove a donor strip that is acceptable, they would almost never allow an assistant to excise and repair a long strip excision. Not so apparently with excising grafts with a small punch during FUE. Added to this is the mistaken belief that machines take away the need for skill and pass it on to an assistant. Fueling this problem is the current trend of the doctors using unlicensed tech services, which supply techs (and often the FUE device with the blessing of the manufacturer) who claim that they can do the entire procedure with little if any assistance from the physician. So we now have physicians who know little about hair and scalp disorders, progression of hair loss, and/or hairline design setting up a potentially lucrative side procedure that takes little of their time. Some of the techs might be "technically" very skilled, but they have little overall knowledge of the medical dangers and pathological conditions that they would be sure to confront, possibly without being aware of their lack of knowledge. It is a dangerous situation that can put both the patient's safety and the doctor's medical license at risk. The problem is not the use of techs but rather the improper and illegal use of techs.

The ISHRS has been frustrated as to the best way to handle this issue and protect the patient, our field, and our reputation, which originally started very low and has slowly been built to the status we enjoy today. Where does the problem lie? With independent techs who see a source of good income? These techs almost need to be unlicensed with no formal education as opposed to RNs, NPs, PAs, and LPNs who have a license to protect and can't move state to state freely. This is in no way meant to criticize unlicensed techs. Their value to an office comes from their training, their passion, and their skills, which they have developed over time. Used properly, unlicensed assistants may not only be good, but they may be exceptional—even becoming esteemed leaders in our field. However, this lack of formal training can lead to serious consequences when the tech is used improperly, as when trying to take the role of both tech and physician. The blame is primarily on the physician, who should know the difference between quality medicine and being uninvolved and uneducated in an area of his or her practice. Without these types of physicians, this poor practice (and sometimes malpractice) would dry up.

Is the solution to cut back on assistant education and start to dismantle the assistants' programs that have been building for 20 years within our organization? Would this stop even one tech from joining the rogue groups? Our trusted assistants have often been part of our practices for years and are considered like family (sometimes literally). Is it fair to make them pay for the acts of a very few? Don't we want them to develop educational enthusiasm and feel pride that they are highly regarded in our offices, nationally and internationally? They can do parts of the procedure far better than the physician and should be recognized for their skills, which are often enhanced at the ISHRS meetings. Let's identify and try to stop the real source—the physicians who have seemingly forgotten their mission to practice safe ethical medicine.

The Executive Committee and Board of Governors did not ask for this problem nor want it, but they have admirably been trying hard to deal with it effectively. So the issue in question is not the goal of protecting the quality and integrity of hair restoration. We all agree about this goal. The problem is the method; whether to focus on the wayward techs or the wayward physicians, or both. The EC and BOG speak for the entire ISHRS, and we are lucky to have an exceptionally talented group at present. They would love to hear from you and receive your thoughts on this difficult matter.

You have just heard from a past *Forum* editor who does not want the assistants' educational programs and their involvement damaged by these unfortunate practices. Do you feel the surgical assistants' program provides a risky venue to further proliferate this problem? On the other hand, will stopping the assistants' program stop these techs-for-hire, and if so at what cost? Are your assistants better today because of all the past workshops and lectures? Does their professional pride spill over into better results in your practice? Do they benefit by sharing their techniques and pearls with other assistants? If so, protect what we have done over the past 20 years. Simply put, let's remove the bad but keep the good in the assistants' program—and keep the educational program in line with the techniques and skills that assistants should perform during procedures. I feel confident that the EC and BOG are trying to do just that.◆

Art and Craft *from front page*

the following to be mandatory: 1) high magnification (I use 4.5× loupes) for recipient site creation as well as for placing, 2) limited depth recipient sites, 3) variable width recipient sites, 4) pain control and hemostasis, 5) differential (graded) graft placement, and 6) the skill, experience, and desire to attain the above goals.

Physicians and staff often resist the use of higher magnification (Figure 2) due to headaches, nausea, and decreased speed. After a short time, symptoms resolve and speed increases. Increased density can be achieved with higher magnification by using smaller blades to make incisions closer. By identifying the subtle changes that signal an incision was made, a spot of blood and/or irregular surface contour, fewer graft sites are missed and fewer grafts damaged leading to greater density.



Figure 2. Left: Designs for Vision; right: Zeiss

Recipient Site Myths

Two myths exist concerning the creation of recipient sites. The first myth is that grafts placed into incisions increase the volume or expand the scalp with negative consequences such as surface contour alterations. Since volumetric expansion can negatively alter the scalp surface, in whatever way tissue is added to the scalp, the goal should be a non-volumetric expansion of the scalp. By this I mean it is ideal to add tissue to the scalp without removing tissue or expanding scalp volume. Incisions provide this expansion by relaxing elastic fibers and creating space to compensate for the volumetric increase caused by adding tissue to the scalp. This full-thickness fenestration of the scalp allows for the addition of grafts without altering the contour or surface of the scalp if the space created is equal to the volume added (Figure 3). This action on the scalp is similar to creating an expanded, or meshed, split-thickness skin graft (Figure 4). Incision depth and width need to be precisely measured to accurately create the space necessary to accommodate the tissue added without an increase in volume.



Figure 3. Scalp incisions, 2,800

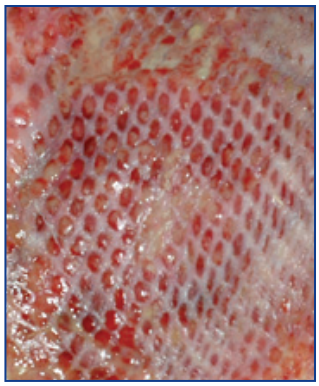


Figure 4. Meshed split-thickness skin graft

The second myth is that punches are preferable to incisions since they remove bald scalp. Punches do remove bald scalp if there are no existing follicles in the recipient area, but the graft replacing the bald skin removed is 98% bald itself. If you calculate the surface area of a 1mm-diameter graft and subtract the surface area covered by three hairs of average hair shaft diameter, you will find the remaining uncovered, bald surface of that graft is 8%. Therefore, when a 1mm-diameter piece of bald tissue is removed and replaced with a 1mm-diameter 3-hair graft, the net removal of bald tissue is 2% (Figure 5). That removal is with the expense of a circle of contracting scar tissue that forms due to each punch and the unnecessary removal of vital epidermis, dermis, blood vessels, nerves, and organelles, as well as subcutaneous fat. Grafts can be placed easier and faster into holes made by punches, but recipient sites made by incisions cause far less damage and result in no removal of vital tissue. Therefore, I use cut-to-size chisel-shaped blades to make recipient sites varying the blade width by 0.1mm and limiting depth by grasping them with a needle holder.

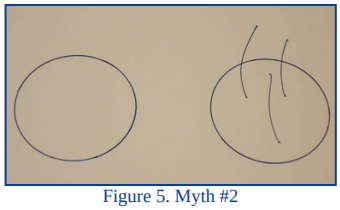


Figure 5. Myth #2

Repetitive placement trauma (RPT) refers to multiple attempts to place the same graft. Ideally, a graft should only be placed once. Each successive attempt causes damage, decreasing the chances of survival for the follicles in that graft. This has also been referred to as the "H," or human, factor.[2] The most common reason multiple placing attempts are required is popping of the graft, the graft being extruded from the recipient site, after the first attempt at placing. Popping is due to inaccurate depth, width, and spacing of recipient sites and/or poor control of bleeding. This will be discussed in more detail later.

Bleeding can severely decrease the ability of the skin to hold the grafts in place (hold ability) and must be controlled to prevent RPT. Local anesthetic and epinephrine generally lose their effect simultaneously. When increased bleeding during recipient site creation or placing occurs, I always ask the patient if he or she is feeling pain. Since pain may be minor, patients often don't report it to avoid more injections. The scalp should be re-injected with anesthetic (usually containing epinephrine) to stop bleeding since the pressure from under the graft can act like a hydraulic pump extruding the graft. The most powerful stimulus for clotting is tissue. The more accurate the fit and placement is (full contact of the graft surfaces with the internal incision surfaces), the greater the stimulus for clotting, and therefore less bleeding, popping, and RPT. Some placers stop bleeding by jamming the epidermis of the graft below the epidermis of the scalp, which can cause unsightly pitting.

Creating Recipient Sites

Hair exits the scalp in varying angles. The angle of the incision determines the exit angle of the growing transplanted hair and should mimic the lost hair and/or surrounding existing hair to create natural flow after growth (Figure 1d). Miniaturized hairs are almost always present as a guide to incision angle, if not, the angle should be based on experience or the reference of another's scalp.

Ideally, existing follicles below and hair shafts above the surface should be left unharmed when making recipient sites. Damage to existing follicles below the scalp surface can lead to temporary or permanent shock loss reducing overall density. If existing hairs are cut above the surface, additional temporary shock loss will be seen. To avoid damage to existing follicles, incisions should not be made too close to existing hair shafts and the angle of the recipient site must be parallel to the angle of the existing follicle. I will make an incision equal distance between two existing hairs

to prevent damage to those follicles. This makes placement easier as it reduces the chance of dragging existing hairs into the incision. If an existing hair is trapped under a graft, it can act as a slingshot, launching the graft out of the site when the hair is moved or combed. It is ideal to clear the area of existing hair shafts prior to placement to prevent their entrapment. Alternatively, trapped existing hairs can be removed after placement of the graft.

Some physicians use no depth gauge to limit the depth of their incisions. To prevent volumetric expansion correct recipient site depth is imperative. I place a few grafts on my finger then put the chisel-tipped blade I use next to the grafts to measure the length of the graft to determine the depth of the incisions. Grafts and individual follicles can vary, usually slightly, in length. Generally, I make the blade the length of the longest graft or follicle or 0.1mm shorter (when there is a lot of variability). After determining the follicle length, I measure it, and then set all new and/or different sized blades to this depth. A placement trial is done prior to making the incisions.

In general, the greater the angle of the hair in an area, the deeper the incision needed. While I don't change depth due to every small increase in angle, I do increase depth when transplanting into temporal points, side burns, eyebrows, mustaches, and other areas of acute angulation. Since placing is more difficult in these areas, I often increase width by 0.1mm to prevent trauma during placement.

To prevent volumetric expansion, correct incision width is as important as correct incision depth. Chisel point blades are preferable to spear point blades since they maintain incision width into the subcutaneous tissue and prevent compression of the bulbs. This can increase follicle survival and help prevent post-transplant kinkiness. Blades are cut from Personna™ double edge razor blades using the Cutting Edge™ blade cutter, which can vary the width by 0.1mm (Figure 10). The larger or more hairs per graft, the wider the blade used. I transplant only follicular units of 1, 2, and 3 to 4 hairs, and generally use three blade sizes increasing 0.1-0.2mm per graft size. For 1-hair grafts, I use 0.7-0.9mm-wide blades; for 2-hair, 0.9-1.1mm; and for 3- to 4-hair grafts, 1.1-1.3mm. If a graft with the same number of hairs in it varies in size, two different sized blades can be used to accommodate those grafts. For instance, if there are big and little 1- and 2-hair grafts, a 0.8mm blade can be used for small 1-hair grafts, a 0.9mm blade for large 1-hair and small 2-hair grafts, while a 1.0mm blade can be used for larger 2-hair grafts. The middle sized, or flex blade, can be used for either 1- or 2-hair grafts at the discretion of the placer. In some patients, I will use up to six different blade sizes to perfectly accommodate all grafts.

Sharp point blade incisions narrow at the bulb level: chisels leave more room for the bulbs compared to the sharp points. I don't like needles because they weren't designed to make incisions, they were designed to make a hole in a vein or artery. The bevel causes unnecessary trauma.

Graft Placement Trials

No two patients' tissues are the same. To assess important variables and parameters, a trial of 10 or so recipient sites should be made and grafts placed. The perfect fit of the graft into the tissue can be determined, which will determine the success of the outcome. As little as a 0.1mm miscalculation can make a huge difference. It can be a nightmare to make 2000 incisions only to find the depth, width, angle, or spacing was miscalculated.

During a placement trial, the spacing of incisions is evaluated. The spacing, or distance, between incisions is extremely important. If incisions are made to close, popping during placement can occur, again, leading to RPT and decreasing yield. If one graft is extruded when an adjacent graft is placed, this is an ominous sign that the incisions are too close. When the volume of one graft causes the adjacent graft to come out, if incision spacing isn't increased, placers are in for a long, tedious day of repetitive placement that will result in decreased yield and, potentially, an unhappy patient. Follicular units are generally evenly spaced in the donor area. Therefore, when no, or few, hairs are present in the recipient area, I use a repeating diamond shape pattern with incisions evenly spaced. The even spacing of the incisions equally disperses any pressure created reducing the chance of popping.

A placement trial also assesses the "hold ability" of the patient's scalp skin or how well the grafts stay in the incisions and resist popping. The patient's inherent elasticity is the primary determinant of hold ability, but it can be affected by a variety of factors, including scarring, sun damage, and advancing age, all of which reduce elasticity and hold ability. Beware of patients with fibrotic skin in general whether from aging or systemic disease (scleroderma). My suspicion starts if, when I shake the patient's hand upon meeting, his hand is tight and fibrotic. We could be in for a long day. Hair shaft diameter is a determinant of graft size, the greater the diameter the larger the graft. If large grafts are placed into recipient sites made too small, the pressure on the lateral wall of the site can be transmitted to the adjacent placed graft causing it to pop. Greater than normal oil production from large sebaceous glands can cause grafts to be slippery, which will decrease the hold ability. Patients with facial acne scars from cystic lesions or with active acne should be suspect. Assistants performing strip dissection can alert the physician, large sebaceous glands can be seen with magnification during strip dissection.

Differential or Graded Graft Placement

All grafts with the same number of hairs are not equal. Differential or graded graft placement refers to the practice of examining each hair in a graft and each graft carefully, based on its structural integrity and the chance it will grow, then placing the highest graded grafts in the areas of greatest cosmetic priority. The placer must have the skill, experience, and desire to judge each graft and place it appropriately. I will start placing at the anterior or posterior edge of an incision size zone, then proceed in the opposite direction filling the sites consecutively like the advancing edge of a wave in that incision size zone. If a graft is deemed to be of lower quality, it is placed in an area of lesser importance. This requires skipping around or placing in multiple locations simultaneously. As an example, thinner, viable, intact, 1-hair grafts are placed in the front row of the hairline while thicker single follicles are placed in the second row. The best 2-hair grafts with thick, intact follicles are placed behind the 1-hair grafts in the thinnest areas and on the part side, the same with 3- and 4-hair grafts. Three- and 4-hair grafts are placed in the central frontal area to increase its density when space between existing hairs is present. Grafts of lesser quality are cosmetically hidden by being placed in areas of lesser cosmetic importance at the time of grading or set aside and placed at the

⇨ page 48

Art and Craft *from page 47*

end of the case. These areas include the non-part side and areas of greater, but in need of, increased density. Grafts containing different numbers of follicles and of differing quality are like colors on a palette, allowing the artist to shade areas of the work with different colors (Figures 1c and 1d).

Graft Placement Techniques

I prefer to hold grafts on the lateral aspect of the gloved index finger of my non-placing hand near the DIP (distal interphalangeal) joint. Approximately 10 grafts, in a bubble of holding solution, are held at a time as such. More or fewer grafts can be held on the finger based on placing speed. It is imperative not to allow grafts to become dehydrated. Other methods of holding grafts just prior to placement can be used including a finger cup.

I cannot overstate the importance of gentle handling of the grafts with forceps during placement. I gently grasp and gather the follicles at or below the dermal papillae with the end of the forceps at about a 45° angle to the hair shafts. It is preferable for those dissecting the strip to leave fatty tissue inferior to the bulb to grab, when possible, as opposed to grabbing the actual dermal papilla. With the graft between the forceps' jaws I find the opening of the incision with the tip of the forceps and gently slide in the tip of the forceps. If the proper angle is followed, the graft will easily follow the forceps. The feeling is similar to putting Legos™ together. When the pegs on two pieces are perfectly lined up, they slide together with a distinctive lack of resistance. If a graft is incompletely placed, a follicle or follicles not fully inserted, there will be an increase in resistance during placement and greater potential for popping. The most difficult move to learn is removing the forceps from the incision leaving the graft in place. I use a cotton-tipped applicator to hold the graft in place while the forceps are removed, then grasp the graft a little higher to insert more, then repeat as if climbing a ladder until the graft is in place. After the graft is placed, it can be adjusted to make it horizontal in relation to the scalp.

The epidermis of the graft remains approximately ½ millimeter above the epidermis of the scalp, thus acting as an important marker to avoid placing the top of the graft below the skin preventing ugly pitting or a depression in the scalp surface (Figure 6). If the grafts are placed too deeply, after healing, a deep pit can form that blocks the reflection of light creating an unsightly black hole (Figure 7) More subtly, it can look like the well or crater around the base of a tree after the snow melts around the tree trunk (Figure 8). This elevated epidermis will slough after 7-10 days leaving the scalp surface smooth and unaltered. If the graft is buried into the dermis/subQ, or if one graft is placed on top of another in the same incision (piggy backing), an inclusion cyst or small abscess can develop. Isolated inflammations, infections, or cysts usually don't effect growth and overall density, but multiple such lesions can reduce follicular yield. If the incisions are made too shallow and grafts left elevated more than that which can slough, a visibly bumpy scalp will be the result. Too shallow incisions can also lead to popping and subsequent RPT. Repeatedly jamming grafts into too shallow incisions may disrupt the cuticle of the hair shaft leading to post-transplant kinkiness (Figure 9). It is not uncommon to see multiple types of deformities in one patient due to improper recipient site creation and graft placement.



Figure 6. Immediate post-op



Figure 7. Pitting, compression



Figure 8. Pitting, compression



Figure 9. Post-transplant kinkiness, compression, pitting, ridging

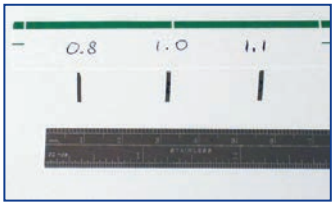


Figure 10. Chisel point cut-to-size blades

Grafts forced into incisions too narrow also can cause popping leading to RPT. A scalp surface abnormality called ridging, the formation of an elevated ridge, can occur secondary to localized volumetric expansion of the scalp when grafts are forced into an incision that is too small (Figure 9). Compression of grafts larger than one hair can result when placed into too narrow an incision. Compressed grafts are unsightly as they stand out since they are denser than the surrounding naturally spaced follicles and have a tufted appearance. Grafts placed into incisions made too wide can fall out or can move around in the incisions resulting in mis-angled growth. After 10 incisions are made for each graft size, grafts are placed then removed and examined as a trial to determine if the incisions are too deep or shallow and/or too wide or narrow.

In the scalp donor area, the hair shafts exit the skin pointing inferiorly. As a result, the follicle's exit from the surface of a graft, either dissected from a strip or by FUE, will create an acute and obtuse angle in relation to the graft's epidermis. Grafts can be placed so the acute angle is facing anteriorly or posteriorly and vice versa for the obtuse angle. In general, the acute angle should be placed forward or in the direction the hair is intended to grow (Figures 11 and 12). Grafts should be grasped by the forceps with the acute angle properly oriented and placed as such, if not, the proper position can be achieved by rotating the grafts during or after placement. After such rotation, be sure to check that the follicles are not twisted or distorted to prevent post-transplant kinkiness. Orienting the epidermis of the graft



Figure 11. Acute angle to the left



Figure 12. 10 days post–op, 1,600 FUE

perfectly horizontal with the scalp contributes to an unaltered scalp surface after healing.

The follicles in grafts dissected from a strip are usually encased in tissue (Figure 13). The entire graft can be gently grabbed and placed as a unit without damage. FUE grafts are generally less protected with less soft tissue between and around their follicles and therefore more difficult to place (Figure 14). There is rarely fat inferior to the dermal papilla to grab with the forceps. In multi-haired FUE grafts, isolated, unprotected follicles often need to be grabbed by the forceps and gathered prior to placement. Placers need to be especially careful and gentle with FUE grafts to prevent trauma and decreased yield.



Figure 13. Dissected graft—stained



Figure 14. FUE graft—stained

The techniques described above have been used at my clinic to treat patients with no prior surgery (Figure 1), with prior unsatisfactory surgery (Figures 15 and 16), and using FUE (Figures 17 and 18).



Figure 15. Before: multiple prior minigrafts



Figure 16. 6 months after 1,600 strip grafts

Other techniques can be learned and successfully used to make sites and place grafts, including the stick-and-place technique. A variety of instruments can facilitate recipient site creation and placement, including mechanical implanters. Whichever techniques and instruments used, the basic theories discussed above apply.

Conclusion

In conclusion, recipient site creation and graft placing are often ignored, but certainly no less important topics for discussion. Producing the best results requires routine practice in all cases of measuring follicles, setting precise and customized recipient site depth and size, testing sites before and during recipient creation, careful graft selection, and atraumatic insertion. Important aspects include RPT, its recognition and prevention, and carefully matching the space created in the scalp with tissue volume added. FUE grafts are commonly more difficult to place so new skills must be learned to place them, and differential or graded graft placement can be the icing on the cake for those who are looking for ways to get the best results for their patients. Preservation of follicles moved leads to preservation of donor follicles as fewer will be needed over the course of a patient's life. Great results lead to satisfied patients who will return and refer other patients.



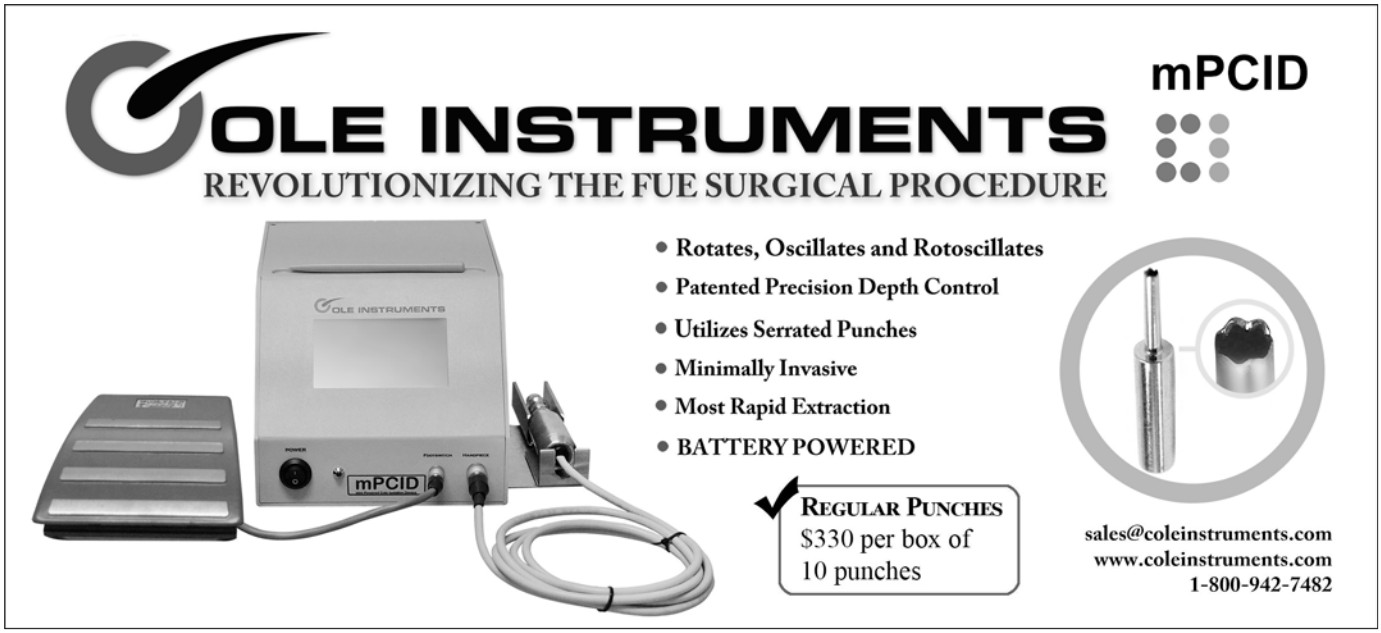
Figure 17. Pre-op: 1,600 FUE grafts



Figure 18. 6 months post-op: 1,600 FUE grafts

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Comparison Between the Survival Rate of Original Single Follicular Units and Single Follicles Divided from 2- or 3-Hair Units

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**This article is a six-month progress report supported by a 2012 ISHRS research grant.*

Introduction

Asian hair is much coarser than Caucasian hair, and the dark color of Asian hair makes the contrast between the hair and skin more noticeable in Asians. These factors contribute to more noticeable appearances after hair transplantation in Asians.[1] It is often difficult to make results look natural, especially in hairline corrections for women.[2] Therefore, some surgeons have tried to divide multi-follicular units (MFUs) into single follicles and use them on the area where naturalness is needed. They believe the survival rate of divided single follicles might be less than the original non-divided follicles, but the gap wouldn't be significant. However, we haven't been able to find any literature about this topic, which is the reason for this study.

Method

Two patients with male pattern baldness were included in this study. We marked two study boxes on the right and left side of the scalp with semi-permanent tattoo.

Case 1 is a 50-year-old man. The original single FUs and divided single follicles were implanted into 1cm^2 study boxes with a density of 80 FUs/cm^2. The study boxes are on both lateral ends of the hairline area (Figure 1).

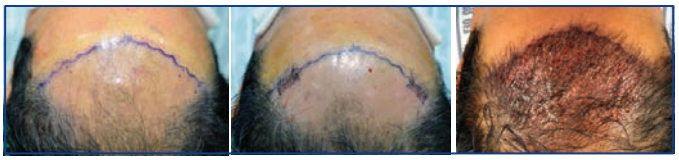


Figure 1. Eighty divided and original single follicles were implanted into a 1cm^2 box on the left and right side of the hairline area, respectively.

Case 2 is also a 50-year-old man. The original single FUs and divided single follicles were implanted into 1cm^2 study boxes with a density of 65 FUs/cm^2. The study boxes are on both lateral ends of the midscalp (Figure 2).



Figure 2. Sixty-five divided and original single follicles were implanted into a 1cm^2 box on the left and right side of the midscalp area, respectively. (This figure shows the left side only.)

Results

In Case 1, 84 hair strands (105.0%) have grown on the right side (original single FUs) and 74 strands (92.5%) on the left side (divided single follicles) (Figure 3).

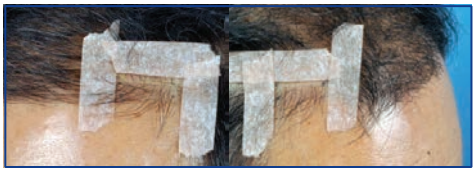


Figure 3. Graft survival was measured after 4 months; 74 (92.5%) hair strands (divided follicles) (left photo) and 84 (105.0%) strands (original FUs) have grown (right photo).

In Case 2, 64 hair strands (98.5%) have grown on the right side (original single FUs) and 53 strands (81.5%) on the left side (divided single follicles) (Figure 4).



Figure 4. Graft survival was measured after 4 months; 64 (98.5%) hair strands (divided follicles) (left) and 53 (81.5%) strands (original FUs) have grown (right).

Discussion

The study was originally scheduled to proceed with 10 patients; however, in the 4-month follow-up, we noticed that most of the tattoos had disappeared. Only in 2 of the 10 cases have the tattoos remained. We think that's because the ink was tattooed too superficially. Nonetheless, there seems to be no significant difference of density between both sides. All of the 3- to 4-hair FUs were divided into 1- and 2-hair FUs and implanted in the whole recipient area mixed together with the original 1- and 2-hair FUs except in the study boxes. Even though regrown hairs are fine yet, the results seem good (Figures 5 and 6).



Figure 5. Case 1: Before (left photo) and 4 months after transplant (right photo).



Figure 6. Case 2: Before (left photo) and 4 months after transplant (right photo).

We used 1cm^2 study boxes with 2cm×0.5cm, because we made boxes on the hairline area for some cases. The other reason was to minimize the damage of less density when the result was poorer than we expected.

When a patient's hair is too coarse to make a natural appearance, some surgeons divide multi-hair FUs into single follicles. As they have thought, this study shows that divided FUs lead to a slightly lower survival rate. This could be caused by several factors. The first thing we can consider is the graft size. Many studies showed that chubby grafts have higher survival rates than skinny grafts. Divided single follicles must be skinnier than the original single FU. Skinny grafts are more vulnerable to dehydration and injuries. Second, follicles can be injured directly during the dividing process.[3] Lastly, when the FUs are divided, one of the follicles could be lacking appendages, which may have stem cells or only partially have them.[4]

Conclusion

We concluded that the survival rates of the divided single follicles were lower than those of the original FUs; however, we feel it remains reasonable to use them for specific areas such as the hairline, temporal area, side burn, eyebrows, etc.

This is the first and unfinished trial, and a further and a larger study is suggested.

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Editor's note: It would be difficult, because of the very small sample size, to extrapolate this result to broader clinical practice. I encourage Drs. Park and Hwang to continue this study with a larger sample. —RHT

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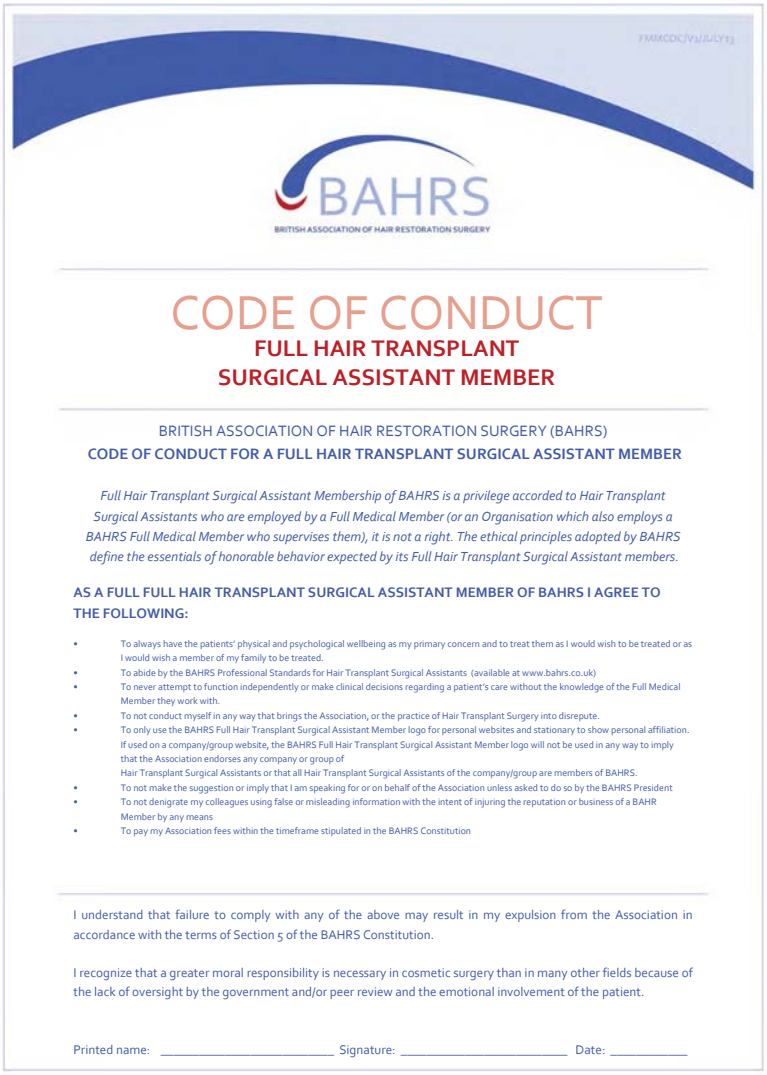
Codes of Conduct and Professional Standards for Hair Transplant Surgical Assistant Members of the British Association of Hair Restoration Surgery (BAHRS)

Greg Williams, MBBS, FRCS(Plast) *London, UK* dr.greg@farjo.com

Individuals who assist a doctor with hair transplant surgical procedures go by a variety of titles, including hair technicians, hair techs, surgical assistants, surgical techs, hair transplant assistants, etc. The ISHRS refers to these professionals as Surgical Assistants, but the British Association of Hair Restoration Surgery (BAHRS) has agreed to utilise the term "Hair Transplant Surgical Assistants" to explicitly differentiate these individuals from the more established and traditional role in the United Kingdom (UK) of "Surgical Assistants" who have specific training in order to gain this title.

In the UK, Hair Transplant Surgical Assistants come from a variety of backgrounds ranging from those with no health care experience at all to dental technicians and qualified nurses. There is no recognised training for Hair Transplant Surgical Assistants in the UK nor are there any formal qualifications required to be a Hair Transplant Surgical Assistant. Individual Hair Transplant Surgical Assistants are usually trained by other Hair Transplant Surgical Assistants or by Hair Transplant Surgeons, but the duration and structure of training varies widely from individual to individual.

Prior to 2013, the BAHRS had been an association for doctors only (known as the British Association of Hair Restoration Surgeons). In 2013, the BAHRS members agreed to change the name and expand the membership of the Association to include, amongst others, Hair Transplant Surgical Assistants. This is in contrast to the ISHRS, which remains an organisation for either physicians (MD, DO, or non-U.S. equivalent), individuals who hold a doctorate (PhD or the equivalent) in a biomedical-related area, or individuals who devote the majority of their professional activities to hair research in an academic setting. Surgical Assistants form an "Auxiliary" rather than having a membership category within the ISHRS.



BAHRS
BRITISH ASSOCIATION OF HAIR RESTORATION SURGERY

CODE OF CONDUCT
FULL HAIR TRANSPLANT
SURGICAL ASSISTANT MEMBER

BRITISH ASSOCIATION OF HAIR RESTORATION SURGERY (BAHRS)
CODE OF CONDUCT FOR A FULL HAIR TRANSPLANT SURGICAL ASSISTANT MEMBER

Full Hair Transplant Surgical Assistant Membership of BAHRS is a privilege accorded to Hair Transplant Surgical Assistants who are employed by a Full Medical Member (or an Organisation which also employs a BAHRS Full Medical Member who supervises them), it is not a right. The ethical principles adopted by BAHRS define the essentials of honorable behavior expected by its Full Hair Transplant Surgical Assistant members.

AS A FULL FULL HAIR TRANSPLANT SURGICAL ASSISTANT MEMBER OF BAHRS I AGREE TO THE FOLLOWING:

- To always have the patients' physical and psychological wellbeing as my primary concern and to treat them as I would wish to be treated or as I would wish a member of my family to be treated.
- To abide by the BAHRS Professional Standards for Hair Transplant Surgical Assistants (available at www.bahrs.co.uk)
- To never attempt to function independently or make clinical decisions regarding a patient's care without the knowledge of the Full Medical Member they work with.
- To not conduct myself in any way that brings the Association, or the practice of Hair Transplant Surgery into disrepute.
- To only use the BAHRS Full Hair Transplant Surgical Assistant Member logo for personal websites and stationary to show personal affiliation. If used on a company/group website, the BAHRS Full Hair Transplant Surgical Assistant Member logo will not be used in any way to imply that the Association endorses any company or group of Hair Transplant Surgical Assistants or that all Hair Transplant Surgical Assistants of the company/group are members of BAHRS.
- To not make the suggestion or imply that I am speaking for or on behalf of the Association unless asked to do so by the BAHRS President
- To not denigrate my colleagues using false or misleading information with the intent of injuring the reputation or business of a BAHR Member by any means
- To pay my Association fees within the timeframe stipulated in the BAHRS Constitution

I understand that failure to comply with any of the above may result in my expulsion from the Association in accordance with the terms of Section 5 of the BAHRS Constitution.

I recognize that a greater moral responsibility is necessary in cosmetic surgery than in many other fields because of the lack of oversight by the government and/or peer review and the emotional involvement of the patient.

Printed name: _____ Signature: _____ Date: _____

The BAHRS felt that since Hair Transplant Surgical Assistants play such a vital role in the Hair Transplant procedure, they should have their own membership category and be included in BAHRS meetings and workshops. In bringing them together within the Association, it is hoped that there might be an opportunity for better communication, education, shared learning, and camaraderie.

In April 2013, the ISHRS published its *Policy Limiting Attendance by Non-Physicians at ISHRS Meetings*. The BAHRS utilised the terminology within this policy with regards to employment status to differentiate between two categories of Hair Transplant Surgical Assistant members.

BAHRS "Full Hair Transplant Surgical Assistant Members" are defined as those members who are Hair Transplant Surgical Assistants and who are employed; that is, they have an employer-employee relationship as recognized by law, and the employment is full-time or permanent part-time (as opposed to an independent contractor, partner, part-time, or temporary service provider, or any other business relationship) directly by a Hair Transplant Surgeon who is a BAHRS Full Medical Member (i.e., a Hair Transplant Surgeon who is doing at least 46-52 hair transplants per year) or by a Hair Transplant Clinic that also employs a Hair Transplant Surgeon who is a BAHRS Full Medical Member and who supervises them.

BAHRS "Affiliate Members (Hair Transplant Surgical Assistants)" are as those Hair Transplant Surgical Assistants who are not employed as above.

The Royal College of Surgeons of England published a Position Statement regarding Surgical Assistants in 2011 that stated: "The work of surgical assistants must be properly supervised, monitored and appraised, and must involve surgeons from the

relevant departments. Surgical assistants—as with all members for the surgical team—must not work outside their sphere of competence and training. Extending practice beyond the defined clinical remit poses risks to patient safety."[1] This Position Statement did not have Hair Transplant Surgical Assistants specifically in mind, but the principle espoused by the Position Statement applies to the Hair Transplant field as much as to any other surgical specialty.

In the UK, the Cosmetic Surgery field is not currently regulated by the government, but following the publication of the Department of Health's document *Review of the Regulation of Cosmetic Interventions*[2] and the Royal College of Surgeons of England's document *Professional Standards for Cosmetic Practice,*[3] the BAHRS felt that both categories of Hair Transplant Surgical Assistant members should have a Code of Conduct. The Code of Conduct for Full Hair Transplant Surgical Assistants is shown in Figure 1 (there is a slightly different version for Hair Transplant Surgical Assistant Affiliate Members).

In signing either Code of Conduct, BAHRS Hair Transplant Surgical Assistant members agree to abide by the BAHRS Professional Standards for Hair Transplant Surgical Assistants. This document is too lengthy to publish in the *Forum* but can be found at www.bahrs.co.uk.

The two main components of the BAHRS Professional Standards for Hair Transplant Surgical Assistants that might be of particular interest to international readers of the *Forum* are:

- A Hair Transplant Surgical Assistant would not make follicular unit extraction (FUE) incisions and would only extract FUE grafts under the direct supervision of a Hair Transplant Surgeon.
- A Hair Transplant Surgical Assistant would not attempt to function independently or make clinical decisions regarding a patient's care without the knowledge of the Hair Transplant Surgeon they work with.

Other components of the BAHRS Professional Standards for Hair Transplant Surgical Assistants that members have agreed to, include:

- A Hair Transplant Surgical Assistant will have Disclosure and Barring Service (DBS) clearance—previously the remit of the Criminal Records Bureau (CRB)—or will have CRB clearance.
- A Hair Transplant Surgical Assistant will ensure that they have the same level of occupational health clearance that would be required if they were working in the NHS or a private hospital facility.
- A Hair Transplant Surgical Assistant will reassure themselves that their place of work is Care Quality Commission (CQC) registered and approved.
- A Hair Transplant Surgical Assistant will reassure themselves that the Full Medical Member or the Organisation that employs them has processes in place for dealing with concerns and complaints raised by patients.
- A Hair Transplant Surgical Assistant will ensure that they are covered by indemnity insurance that is adequate for the Hair Transplant procedures that they assist with.
- A Hair Transplant Surgical Assistant should participate in and be aware of audits regarding the Hair Transplant practice they work in.

Hair Transplant Surgical Assistant members who fail to abide by the principles within the BAHRS Professional Standards for Hair Transplant Surgical Assistants will be subject to an enquiry by the BAHRS Disciplinary Committee and would be expelled from the Association if their conduct was found to be at odds with the honourable behaviour expected by the Association.

In having its Hair Transplant Surgical Assistant members sign a Code of Conduct, the British Association of Hair Restoration Surgery seeks to reassure the public that, although the Cosmetic Surgery field is not currently regulated in the United Kingdom, all BAHRS members involved in a patient's Hair Transplant Surgery comply with ethical and practice standards approved by the Association.

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Going Beyond Hair: Seven Simple Actions We Can Take to Help Prevent Major Illness in Our Hair Transplant Patients

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The field of hair transplantation surgery (HTS) is constantly evolving. New developments are continually being made to improve doctor efficacy and overall procedural success. Given the vast array of backgrounds from which HTS specialists originate, this is not surprising as each doctor brings his or her unique talents to the larger HTS community. Over the years, we have seen contributions to our practice from specialists ranging from dermatology and plastic surgery to family and emergency medicine. Obviously, regardless of background, our focus is the replacement of the follicle. However, as physicians first, we cannot afford to overlook the patient as a whole. By leveraging our varied backgrounds to foster a broader perspective during hair transplantation procedures, we can greatly increase the overall care of our patients while simultaneously enriching our reputation as HTS specialists.

This article is a review of the current literature as it pertains to the preventative health maintenance of HTS patients. Many physicians assume that it is neither their responsibility nor within their scope of practice as specialists to consider the basic health needs of HTS patients any more than it affects their ability to perform a safe and effective hair transplant procedure. Though understandable, this position is shortsighted. Even in the practice of HTS, a field primarily focused on improving the outward appearance of the patient, we understand implicitly that underlying the desire in many patients for hair transplantation is the perceived benefit to psychological and mental health. Let us not miss the body for the hair! When symptoms outside the realm of HT are observed that might compromise a patient's overall health, we are remiss to ignore them.

This article will focus on seven aspects of a patient's medical care outside the traditional scope of HTS that we are ideally suited to handle. There may be other aspects that are not covered here that may be addressed if you feel competent and willing to do so. This is not a step-by-step guide to preventative care in an HTS office. Nor is it intended to "bog down" an already busy practice. It is only meant as a refresher with current recommendations pertaining to the items physicians already know they should be monitoring in their patients. It is recognized in this age of increased liability and decreased scope of specialty that it takes an open mind and a willing desire to intercede in areas outside our usual daily practice. Yet, as physicians, we are first healers and only later specialists. In the end, our patients' lives as well as the status of the HTS specialty as a whole will be improved.

Annual Physical Exam

The majority of HTS patients are males between the ages of 45 and 60. Differing from female patients who often undergo well-woman exams on a yearly basis, many male patients have not seen a medical professional in years. HTS surgeons may be the only contact these patients have with a medical professional at all. This gives a unique opportunity to affect not only the cosmetic health of these patients, but quite possibly, their overall medical health as well.

A few simple questions can be asked to ascertain if the patient is being cared for by a primary care physician (PCP). Patients (especially those who are middle age and older) who have no PCP and have not been to a physician in years can sometimes be spotted during the HTS history by their nonexistent and "healthy" medical and surgical records. If the patient has not seen a doctor in a few years, a yearly checkup should be advised. For those other patients who have never been to a doctor, a simple recommendation to get a baseline exam can be of great benefit to rule out any serious and potentially treatable diseases.

Of the seven areas discussed, this alone may be the single most important. The HTS history and physical is severely limited when it comes to evaluating the overall health of a patient. Therefore, by putting the patient in touch with a health care provider and emphasizing the importance of routine checkups, an HTS surgeon can help place the patient on track to a healthier life.

Hypertension

Hypertension (HTN) is a vital sign that can often cancel an HTS procedure if it is outside the "safe" zone. With a chronic elevation in blood pressure (BP), there is an ever-increasing risk of stroke and coronary disease in untreated patients under the age of 65. Currently, patients are advised to have a goal of <140/<90 mmHg, and for some patients with additional comorbidities, even lower BP levels are advised.[1,2]

Often, patients who have histories of HTN but have not followed up with their PCP end up in the office ready for surgery. Each HTS surgeon has his or her own comfort level when it comes to BP and undertaking a safe and successful HT procedure. Physicians are commonly apt to attribute elevations in BP to stress alone. They may mistakenly attribute BP elevations to stressful morning commutes or to "White Coat HTN," which is an elevation in BP only seen in the clinical setting and that affects BP much less than one might think. Studies have shown that when a patient has an elevation in BP secondary to White Coat HTN, there is only a mean elevation of 15 and 7mmHg in the systolic and diastolic BP, respectively. Furthermore, there is a very low likelihood that a patient with an office diastolic BP $\geq$105mmHg has White Coat HTN.[3]

If the patient's BP is very high, canceling the HTS may be appropriate. Instead of simply referring the patient back to his PCP for treatment, the physician might be able to take a moment to discuss the importance of BP monitoring. Even if a BP is only mildly elevated, speaking as a physician may motivate patients to get the help they need to improve their health.

Prostate Cancer

Physicians will undoubtedly encounter patients taking finasteride or desiring to start it for help in the prevention of native hair loss. Patients should be advised of both the benefits as well as the potential side effects. A discussion of prostate specific antigen (PSA) levels and the potential for prostate cancer may also ensue. Prostate cancer is a very common disease diagnosed

in 242,000 men each year in the United States alone. It is the sixth leading cause of cancer death totaling 28,000 per year.[4,5] During the patient history, questions regarding a family history of prostate cancer or other prostate disease should be asked in order to determine potential risk factors. The patient should be advised of the alterations in PSA levels that can occur when being tested by a PCP.

As well as advising patients about taking or continuing finasteride, this is an opportunity for the physician to discuss whether getting a PSA level would serve any preventative health benefits. Studies have indicated that an elevation in PSA levels is often observable prior to the onset of prostate cancer by up to 5 or 10 years.[6,7] However, there is currently some debate regarding whether the benefits of screening outweigh the harm. Some organizations feel that the morbidity involved with frequent and sometimes unnecessary testing and biopsies is not worth the lives saved. Major organizations such as the American Cancer Society (ACS) and the American Urological Association (AUA) recommend involving men in the decision-making process. The ACS recommends a PSA with or without a digital rectal exam (DRE) beginning at age 50 unless the patient belongs to a higher risk group (e.g., family history, African American, etc.), in which case testing should begin at age 40. At a minimum, the AUA recommends getting a baseline at age 40 and considering both a PSA and a DRE on an annual basis.[8] In these circumstances, when HT surgeons find themselves in a position to discuss the benefits and risks of PSA testing, patients should be fully informed and potentially referred to their PCPs for testing.

Colon Cancer

During a review of a patient's past surgeries and procedures, specifically looking for any difficulties in bleeding or healing, a discussion about the patient's last colonoscopy may arise. Colorectal cancer (CRC) is the second most common cancer in the United States, causing over 600,000 deaths worldwide.[4,5] Despite these statistics, many adults that should be tested are not. Between 2002 and 2010, the percentage of adults aged 50-75 who should be screened in the United States only rose from around 50% to 65%.[9]

In addition to finding valuable information concerning bleeding risks and the patient's ability to tolerate past procedures, this might be an excellent opportunity to recommend a screening measure for CRC. The patient can easily be educated about the incidence and risks of the disease and the benefits of screening. Patients with an average risk, according to the American College of Physicians, should be screened starting at age 50 with a fecal occult blood test (FOBT) annually, flexible sigmoidoscopy every 5 years (with FOBT every three years), or colonoscopy every 10 years.[10]

Furthermore, patients should be questioned about a family history of colon cancer. With a positive family history the need for screening should be reinforced beginning 10 years before the age of the youngest affected relative or at age 45 for African Americans, as recommended by the American College of Gastroenterology.[10]

Tobacco, Alcohol, Drug Use

In the HT history taking, surgeons can easily forget to question patients about their complete social history. Much may be discussed concerning career and home life, but often overlooked is whether they are smokers, heavy drinkers, or recreational drug users. The physician should probe into these areas more deeply to determine the overall health status of the patient. Cigarette smoking, specifically, is one of the most preventable causes of cardiovascular disease, lung cancer, chronic obstructive pulmonary disease, and death. Over 400,000 U.S. deaths can be attributed to tobacco on a yearly basis.[11]

While many of these social questions should be asked in accordance with the individual physician's comfort level and/or determination of importance for the safety of the HT procedure, information concerning alcohol use and smoking does have current and future benefits for both the patient and the HT surgeon. It has been noted in smokers that there are more post-operative complications as well as delayed wound healing, which directly affects the hair transplant procedure.[12] The United States Preventative Health Services recommends discussing the patient's tobacco use status at every patient visit. Studies show that a physician's encouragement to quit can help stimulate patients to kick the habit.[13,14] HTS surgeons should educate patients about the risks of smoking, encourage them to quit, and guide them to their PCPs for further counseling and treatment. Smokers who do quit also reduce their future risk of developing a tobacco-related disease.[15]

Alcohol abuse and drug use may be a more challenging task to deal with, as there are fewer opportunities to screen a patient for these. Still, alcohol and drug use are among the most frequent causes of preventable death, and they often go unnoticed and consequently untreated by primary care.[16,17] A physician should be on the lookout for any red flags of addiction or abuse of these substances. If there are clear signs that a patient has a drinking or drug issue, the physician might be able to intervene personally, help him or her to get to know what community resources exist, or refer the patient to a PCP for further treatment.

Skin Cancer

During the physical exam, HTS surgeons determine the current status of hair loss and develop a treatment plan. The hair and skin is routinely examined carefully for signs of disease and for candidacy for the procedure. A physician should have at least minimal training in recognizing unusual skin attributes. This might lead an HTS surgeon to suspect skin cancers such as basal cell, squamous cell, or melanoma, and to recommend the patient see a dermatologist for further evaluation and possible biopsy.

In the United States, melanoma is the fifth and seventh most common form of cancer in men and women, respectively. It is the most fatal form of skin cancer and continues to become more common as in 2011 more than 70,000 invasive melanomas were diagnosed in the United States.[5] The earlier lesions are identified and treated, the better the survival rates in melanoma cases.[18]

Even though the area of evaluation in the HT physical exam is primarily located to the head and neck, these are areas of frequent sun exposure and common areas for lesions to develop. Even a cursory exam can uncover areas on the scalp, face, and neck that might be suspect. Questions should be posed about changes to the symmetry, border, color, or size of a lesion. If a suspicious area is noted, the physician can also ask about a family history of skin cancer and highlight the importance of a full body skin exam if warranted. HT should also be deferred until a lesion is appropriately assessed, giving a patient additional impetus to act.

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Obstructive Sleep Apnea

The majority of the perioperative phase during an HTS is thankfully quite routine and uneventful. Obstructive sleep apnea (OSA) is quite an unusual diagnosis for a PCP to make because sleep studies are not routinely performed in the office. Nonetheless, OSA is a common disorder that affects approximately 10-25% of adults and can put them at risk for neurocognitive disorders and other medical conditions, as well as increasing mortality for those with cardiovascular comorbidities. It affects males and females both from the ages of 18 to 65.[19,20] This is another diagnosis that might be challenging to make unless the right questions are asked.

As HTS surgeons, there is a unique opportunity to occasionally monitor sedated patients who have fallen asleep during the procedure. If apneic or hypopnic episodes are witnessed or loud snoring heard, the physician can follow up with questions concerning history of heart disease or family history of OSA. More specific questions can also be asked about sleeping habits, daytime somnolence, periods of silence followed by loud snoring as reported by their bed partners, poor concentration, morning headaches, and nocturnal angina.

The short "sleep study" during an HT procedure and a few targeted questions typically cannot result in an accurate diagnosis, but they can give an index of suspicion that may be sufficient enough to recommend the patient follow up with a physician.

Further Prevention and Conclusion

Depending on the HTS surgeon's geographical area, background, specialty, and other variables, additional opportunities for disease prevention beyond the seven considered here may arise. These may include the use of ASA as prophylaxis for secondary prevention of stroke and heart disease, the avoidance of HTS in patients with Body Dysmorphic Disorder (BDD) and appropriate psychiatric referral, the severely depressed patient, and cases of domestic violence, especially in the female patient. The take-away point is that, as physicians, we should keep the whole patient's health in mind, calling upon the entirety of our training to administer the very best care. Not only will this benefit our patients, but also it will raise the entire society of hair restoration surgeons to a higher standard.

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Controversies



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Forceps vs. Implanters

The history of hair transplantation in the 20th and 21st centuries has been dominated by the use of forceps during the implantation phase. As the grafts have become smaller, so too have the forceps become finer. Follicular unit grafts (the gold standard) require greater fine-motor skills in their handling when using forceps. Their fragility requires great care and attention to detail by staff and thus produces a significant learning curve for staff during early training. The use of implanter "pens" for the graft insertion phase is not a new development, but it has gained increasing favor in recent times. I think it would be useful to review the pros and cons of forceps and implanter pens.

Historically, the first implanter pens seem to have been popularized in Korea by Mr. Choi. They were initially used for eyebrow transplantation in patients suffering hair loss from leprosy. The technique spread to Japan in particular, and became a popular way to perform follicular unit grafting generally. Often, the trained "Choi techs" visited the doctor's surgery for a procedure before moving on to the next doctor. A very early example of "roving techs"! It seems the early popularity of this technique was explained by the coarse, stiff, and straight characteristics of northern Asian scalp hair, which lent itself to the easy loading of the implanter pens.

Let's discuss the theoretical advantages and disadvantages of both forceps and implanter pens.

Forceps

The forceps has been the mainstay of graft implantation and has the advantage of cost effectiveness due to being able to be autoclaved innumerable times, provided the tips remain undamaged. This is not an advantage in the UK as forceps are required to be disposed of after a single use. In addition, "one size fits all" as the forceps can accommodate any size of hair graft. The disadvantage of the forceps is that considerable skill is required to both hold the graft without crushing the bulb region, and then to insert the graft bulb without traumatizing the graft.

Staff must also learn the correct depth of insertion so as to prevent cyst formation (too deep) or graft desiccation (too shallow). Once learned, though, the skill set allows the development of significant speed in inserting grafts. International best practice is probably 250-300 grafts per person per hour, but many trained staff can significantly exceed this speed.

Implanter Pen

The principle advantage of the pen is that no handling of the hair bulb occurs during loading or insertion of the grafts. In addition, the implanter controls the depth of graft insertion. There is less training required of staff to learn both the loading and graft insertion phase. Significant speed is possible with practice. Controversially perhaps, the implanter pen can be used for practices utilizing "stick-and-place" as the sharp needle of some types of implanters can both cut and dilate prior to the insertion phase. Phenomenal speeds of recipient site cutting and graft implantation can be attained by a single operator utilizing "stick-and-place," including speeds of up to 1,500 grafts per hour! The only controversy here is who is using the implanter, the doctor or the surgical techs? It is worth noting that similar numbers of staff are required as for forceps use because multiple, different size pens are required and they need to be continuously reloaded.

A particular advantage for implanter pens may be seen in FUE grafting as the distal portion of the FUE grafts is relatively denuded of supporting tissue and therefore both more fragile and more difficult to grasp with forceps. By way of comparison, the implanter pen is easier to load (by grasping the epidermis to insert into the pen) and no contact occurs with the bulb area. This may (no evidence yet) translate into better growth and better results. Time will tell.

The disadvantages of implanter pens primarily relate to cost. The Choi implanters are expensive, though newer types have introduced much needed competition and prices are trending downward. It appears you would need at least 6 pens per case as different size implanters are required for 1-hair, 2-hair and 3-hair grafts. I have seen surgeons using 10 pens per case. The multiple pens may be single-use, further increasing the per-case cost, but some pens allow changing of needles. There is also the potential difficulty of use in patients with curly hair and the possibility of graft dehydration if excessive time occurs between loading the pen and inserting the graft.

In mature practices where forceps have been the mainstay, it is sometimes difficult to "swap" staff to the implanter as a different technique is required. New practitioners often like the idea of implanter pens as the learning curve for their staff is shorter. In addition, although the implanter theoretically controls the depth of implantation, there is a tendency to place the graft too deeply when working at high speed. If the implanter is being used to cut as well as implant, the grafts can tend to be placed more vertically, which can result in more popping. Popping may also be a function of closely spaced "stick-and-place."

All of these technical issues can be controlled with experienced staff practicing great care and paying attention to detail.

Conclusion

So what is the future likely to hold in this debate? I suspect the cost of multiple implanter pens per case will remain a significant deterrent to many doctors, although the other advantages may make them attractive to some practitioners.

The skill set of the staff is still a very important factor with either technique, and in trained hands the results are likely indistinguishable from each other.◆

Complications and Difficult Cases

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In the previous issue of the *Forum*, Dr. Cagatay Sezgin from Turkey described an interesting case of donor site necrosis seen after an FUE procedure. We follow with a case submitted by Dr. Kamran Jazayeri from Iran, which describes a well-documented but fortunately rare complication of hair restoration surgery: recipient site necrosis. These types of complications may be distressing both to the surgeon and to the patient, but with appropriate management, positive outcomes may be achieved.

A Case Report of Central Area Necrosis Following a Hair Transplant Procedure

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History

The patient was a healthy 57-year-old man with no significant past medical history except for a 20+ year history of smoking (Figure 1).



Figure 1. 57-year-old patient

After consultation, the patient was scheduled for an FUT procedure in order to cover his anterior and midscalp areas. A strip was harvested from the donor area under local anesthesia, with no complications or difficulties. The recipient areas (frontal hairline, front and anterior midscalp) were locally anesthetized with a field block using a 50/50 mixture of 0.5% bupivacaine and 2% lidocaine and 1:100,000 epinephrine. Next, tumescent was prepared by mixing 100ml of normal saline, 40 milligrams of triamcinolone and 1:100,000 epinephrine. A total of 30-40 milliliters of this solution was injected subcutaneously to achieve vasoconstriction and tumescence prior to making the recipient sites.

The recipient sites were made using cut-to-size micro-blades. 0.9mm blades were used for the anterior hairline zone and 1.0-1.2mm blades for the other areas. The recipient site density varied from 25-35 slits per square centimeter, with the highest density in the frontal core area. All the slits were parallel (sagittal) in orientation. Blades were set to a depth of approximately 4mm, slightly shorter than the length of the patient's hair follicles. During the operation no abnormal reaction in the recipient area was noticed except for the usual transient blanching due to the effect of the epinephrine.

A total of 1,850 follicular units were transplanted in the frontal hairline, anterior and midscalp areas. The patient returned for bandage removal the day after the surgery with minimal, normal post-op crusting and a normal appearance of the surgical areas.

The patient returned for suture removal 8 days after surgery and at that time an area of thick crusting was noticed in the frontal core (central area) of his anterior scalp (Figure 2). He reported no pain or other symptoms in the affected area. During the next several days he was examined in the office every one or two days and showed no signs of improvement in the crusting, while the surrounding areas appeared normal.

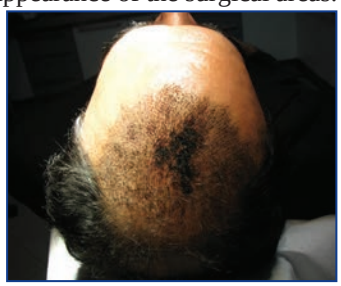


Figure 2. Area of thick crusting noted in the frontal core 8 days' post-op.

Two weeks after the operation, the adherent eschar was debrided completely using a 3mm curette deep to the subcutaneous layer, and the resulting wound was left open to heal by secondary intention. The patient was advised to clean the wound daily and to apply an antibiotic ointment regularly to the base of the wound. He was also advised to stop smoking.

The debrided wound healed and re-epithelialized in about three weeks, through secondary intention, leaving an atrophic and depressed scar in the central scalp area (Figure 3). Hair growth was achieved in the surrounding areas, but with much less density than what was expected.



Figure 3. Atrophic and depressed scar in the central scalp area.

One year after the first operation, 350 follicular unit grafts were transplanted in the scar and its surrounding areas with a density of approximately 20 follicular units/cm^2. No epinephrine was used this time and the patient was strongly advised not to smoke in the days preceding and following the procedure.

The patient did not come back for follow-up so pictures after the revision transplant are not available. However, in a recent telephone call he stated that he is very happy with the final outcome of the procedures.

Discussion

The patient developed an area of full-thickness skin necrosis over the central scalp, behind the hairline. This central area (frontal core) is vascularized with end arteries and is a watershed area. Paradoxically, this is the region where the highest density of grafts is required to achieve a more natural and dense appearance. If the perfusion is compromised, necrosis may occur anywhere in the recipient area, however, the central area is the most vulnerable region.

In patients with risk factors such as atherosclerosis, heavy smoking, and diabetes, the surgeon must use minimal amounts and concentrations of epinephrine in the tumescent solution in order to decrease the risk of vascular perfusion compromise.

Regarding the recipient sites in these patients, the physician should be careful to avoid dense packing and stay on the safe

side with a target density below 30 follicular units/cm^2 and watch the recipient area carefully for any early signs of perfusion compromise such as blue discoloration (cyanosis).

In my opinion, using needles instead of micro-blades may cause less vascular injury, probably because their sharp, pointed end injures a smaller area in comparison to the rectangular tip of the micro-blades. Minimizing the depth of penetration of the needle may also be helpful.

In the event of necrosis, early detection by closer follow-up and early application of topical nitroglycerin ointment may be helpful. Soon after the limits of the necrotic area are demarcated, debridement of the necrotic eschar and proper wound management to promote secondary intention healing usually leads to complete healing within a few weeks and the resulting alopecic scar may be transplanted later, with some extra precautions.

In order to repair the alopecic scar secondary to the necrosis, it is recommended to wait at least a couple of months to allow for complete healing and revascularization of the area. Also, it is important to counsel the patient about the need to stop smoking. Furthermore, avoiding or limiting the use of epinephrine and preparing the recipient sites with less density, using the smallest needles or blades possible and minimizing the depth of the recipient sites may be helpful.◆

Columnist's note from Dr. Marco Barusco: Necrosis of the recipient areas is a rare but well-described complication of hair restoration procedures. It is important to try to identify patients who are at increased risk for poor vascular supply and to do everything possible to try and minimize their intra-operative risk of problems.

Patients at increased risk for recipient area necrosis include:

- Older patients
- Patients with history of peripheral vascular disease (low perfusion of extremities, history of previous amputations from vascular disease, etc.)
- Diabetics under poor control
- Patients with history of coronary artery disease and atherosclerosis
- Heavy smokers or prolonged history of smoking
- Patients with history of sickle cell disease
- Patients with history of hypercoagulation (history of deep vein thrombosis, etc.)
- Patients previously submitted to scalp flaps, scalp surgeries, or multiple HT procedures

This highlights the importance of a thorough medical history on every patient and a physical exam in case of suspicion (check peripheral capillary refill, peripheral pulses, etc.).

Intra-operatively, the use of high concentration epinephrine for tumescence coupled with high volume of tumescent solution and dense-packing in the central core of the anterior and midscalp may overwhelm the available blood supply to the area, causing ischemia and necrosis. In high-risk patients, central core density should be achieved gradually with multiple procedures instead of with dense packing.

The orientation of the recipient sites seems to also matter, although this is a topic of controversy. Dr. Jerry Wong was asked to give his opinion on the degree of vascular injury and orientation of recipient sites (perpendicular or parallel), and he is of the opinion that perpendicular (coronal) sites cause more injury to the blood supply than parallel (sagittal) ones. I agree with that statement.

Besides the reduction of epinephrine and the volume of tumescence solution used, once an area of persistent blanching or cyanosis is noted, the use of topical nitroglycerin gel may minimize the area of necrosis or avoid it altogether. Care must be taken when using nitroglycerin topically, since it may lower the patient's systemic blood pressure. A dose of 325mg of aspirin may also be given to the patient, and the application of moist heat to the scalp may promote local vasodilatation and improvement in perfusion.

Once the area of necrosis is delineated and stops progressing, which may take a few days, then debridement and wound care are standard of care. Hyperbaric chambers have been used by some during the healing phase to improve wound closure. Low level laser therapy is also known to improve wound healing and should be considered.

Hair Sciences



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This article references the recent report from Cotsarelis and his group: Yang, R., et al. Generation of folliculogenic human epithelial stem cells from induced pluripotent stem cells. *Nat Commun.* 2014(Jan); 5:3071.

In a recent issue of the *Forum*, I reviewed some of the relevant research on follicular cell implantation ("hair cloning") over the last ten years.[1] In this column, I'll review recent studies that relate to this topic as well, and in particular a recent report from Cotsarelis and his group (cited above). Although these reports add even more complexity, they also give us new hope that cell therapy may someday actually work.

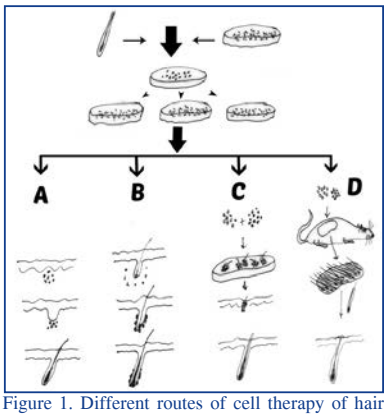


Figure 1. Different routes of cell therapy of hair restoration

It can be a little confusing understanding all the ways implanted cells can be used to treated hair loss, so I tried to organize it into a simple chart so I could better understand it myself (Figure 1). Cells from the patients' hair follicles (e.g., dermal papilla) would be isolated, multiplied in cell culture, and then used therapeutically. In the simplest technique, dissociated cultured cells are implanted into the skin in the hope they will create new follicles ("follicular neogenesis") (Figure 1A). Several groups that have tried this over the past 10 years have been unsuccessful.

Another way of stimulating hair growth is by implanting cells and having them attach themselves to existing follicles and confer properties of the donor cells to the miniaturizing follicle (Figure 1B). This is the approach being tested by RepliCel using cultured dermal sheath cup cells. Another way is to begin the follicular neogenesis process either in culture dishes (Figure 1C) or in animals acting as intermediate hosts (Figure 1D). The implantation could then be carried out like a standard hair transplant, placing individual "bio-engineered" grafts into recipient sites.

In the past, we have always thought of the patient's hair follicle as the donor source for cells. This creates certain limitations, particularly with the generation of epithelial stem cells. Stem cells by their very nature are often in short supply. But what if we could create unlimited epithelial stem cells? A recent report by Cotsarelis and Xu suggests that this may in fact be possible.

Previous work by stem cell scientists showed somatic (normal non-stem) cells could be made into "induced pluripotent stem cells" using specific cues (cMYC, SOX2, KLF4, and OCT4). These "iPSCs" resembled embryonic stem cells in their ability to differentiate into a large variety of cell types, but previous attempts to turn them into "folliculogenic" epithelial stem cells had been unsuccessful. In the report by Cotsarelis and Xu, they succeeded in turning iPSCs into epithelial stem cells capable of generating all normal epithelial layers of the human hair follicle.[2] They accomplished this using precise sequencing of retinoic acid (RA) followed by a combination of epidermal growth factor (EGF) and bone morphogenetic protein (BMP4), and ending with EGF treatment alone. They confirmed the identity of their newly generated cells using known markers for bulge epithelial stem cells (cyokeratin 15, CD200, and ITGA6). Furthermore, when these epithelial stem cells were combined with dermal cells and injected (or placed in a silicone chamber) into immunodeficient mice, they generated hair follicles with all the normal markers.

While this report is a very exciting breakthrough, it should be pointed out that the process of taking a normal body cell (somatic cell) and turning it into a hair-generating epithelial stem cell involves multiple steps using agents that alter the basic genetic expression, thus raising the concern of tumor formation. Any therapy based on these techniques will likely take years of validation and testing to ensure its safety.

This does help in providing a solution for one-half of the "hair cloning" puzzle. Besides epithelial stem cells, we need hair-inducing dermal cells to achieve follicular neogenesis. Nothing has been reported in this way since the 2010 report by Park and colleagues in the *Journal Dermatological Science*, which reported the ability to transform mesenchymal stem cells from either bone marrow or umbilical cord into dermal papilla cells that can induce hair follicle formation.[3] They did this using specific "dermal papilla forming medium" that was serum free and contained hydrocortisone and hepatocyte growth factor (HGF). Given the advances in stem cell biology, it can be assumed that it is only a matter of time before this technique or something similar is turned into a validated and consistent method to generate hair inductive dermal cells from other cell types.

These methods to reprogram regular cells into stem cells raise significant safety concerns as mentioned. A recent report by Vacanti and colleagues suggests that cells can be triggered to become stem cells simply by subjecting them to physical stress, such as half an hour in acid bath.[4] This breakthrough report suggests all cells retain the potential to revert back to stem cells in response to physical stress (e.g., wound healing), a concept that has far-reaching implications. Although it has not been tested, it may be that stem cells derived from physical stimulus (e.g., low pH) are less prone to tumor formation than those derived from the specific biologic triggers described earlier.

Putting this altogether, and referring back to the chart in Figure 1, we are starting to see that some of the assumptions used at the beginning of hair cloning projects may no longer be valid. We may not be limited to the cells derived from the patient's follicle and may soon be able to create "folliculogenic" stem cells using other readily available cell types. It will take considerable time and research to test these new concepts, but the dream of unlimited hair, even if further down the road, is becoming a more realistic possibility.

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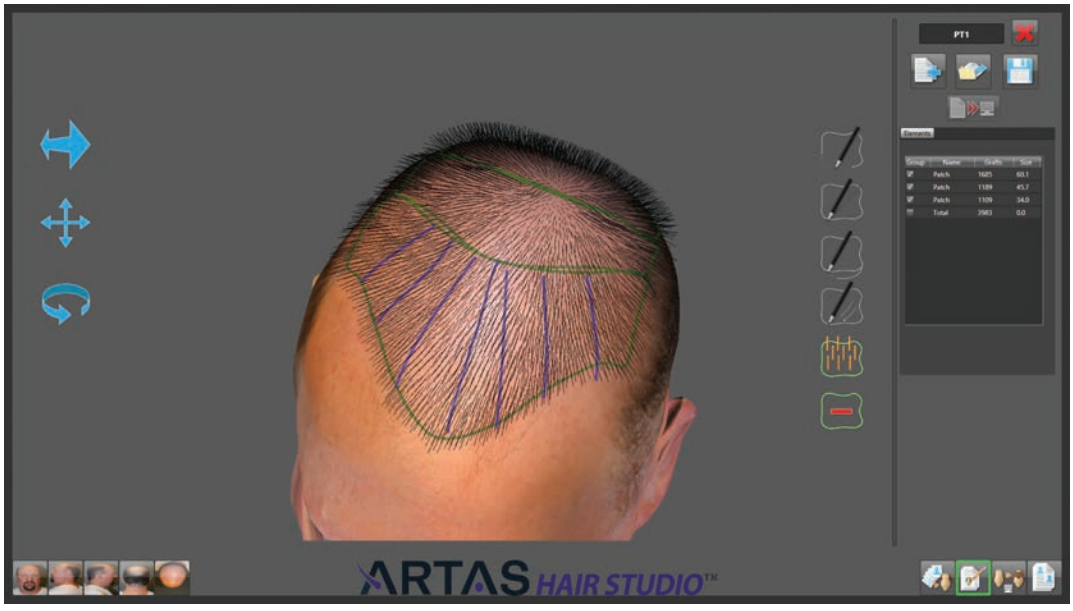
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Cyberspace Chat

John P. Cole, MD *Alpharetta, Georgia, USA* *john@forhair.com*, and
Bradley R. Wolf, MD *Cincinnati, Ohio, USA* *wolf@wolfhair.com*


John P. Cole


Bradley R. Wolf

The Safe Donor Area (SDA)

Dr. Cole takes the lead on this issue of Cyberspace Chat examining the safe donor area.

There are two limiting factors in hair restoration surgery: donor supply and bald surface area. Bald surface area expansion over time is commonly recognized. What do we know about donor supply and how permanent is the donor area? To begin with, we are all taught there is a safe donor area (SDA).

Dr. Richard Shiell states the following about the safe donor area: It all boils down to the definition of "safe donor area" and whether we mean "absolutely safe" (there is no such thing), "relatively safe," or "relatively risky," which is what we should all be talking about. This problem with definition is usually the source of any ongoing debate.

Dr. Bob Haber states the following regarding donor area permanence: Remember that even hair from the "permanent zone" can be lost with time from senile alopecia or other mysterious causes, so there are no iron-clad guarantees of permanence.

Dr. Walter Unger points out: SDA is "based on probabilities not certainties, so it is perhaps more appropriate to call it the "safer donor area."

According to Dr. Thomas Alt, the safe donor area is 6.5-7cm in width at its anterior limit above the reflection of the external ear. Dr. Walter Unger suggests that the width in the mid-occipital area is about 7cm. My own assessment of the safe donor area is 6cm above the ears and 7cm in the mid-occipital region. Of course, all estimations of the SDA are based strictly on the degree of hair loss. In a NW 6, the width of the SDA in the mid-occipital region may shrink to a range of 3-5cm. In a NW 7, the anterior border of the SDA may shrink, as well.

A NW 5 often has 150-180cm^2 of hair loss. In my own estimation, the SDA is between 161cm^2 and 203cm^2. A NW 6 may have between 225-250cm^2 and even more surface area of hair loss. In that the total surface area of loss may exceed the SDA, how can we expect to achieve full coverage in advanced degrees of hair loss?

Fortunately, as Dr. Shiell points out: Persistence of the relatively safe donor fringe is something that has amazed me over the past 40+ years.

Dr. O'Tar Norwood found that only 3% of men will become a NW 7 by age 59, and only 7% of men will become a NW 6 by age 59. Hair loss does march on, however. Studies by both Dr. Norwood and Dr. Unger show a significant increase in the percentage of men having a NW 7 type hair loss beyond age 80. Dr. Shiell added his assessment of these Unger and Norwood studies based on his own personal experience observing men over age 80: I think the figures for Type 7 baldness obtained by Dr. Unger (26%) and Dr. Norwood (17%) are both within the correct range, which is probably 21%±5%.

While we appear to have some protection from severe degrees of hair loss based on probabilities in patients under age 69, we are still limited in our restorative capacity. According to Dr. Norwood, 40% of men will reach a NW 3V or greater by age 59. Frontal area hair loss in a NW 3V may exceed 70cm^2 while vertex loss often exceeds 50cm^2 in the NW 3V. There remains an additional 30-50cm^2 surface area on the top of the scalp that may thin with advancing years.

Based on the personal communications with a number of physicians, the donor area has between 3,500 and 8,000 grafts available, with the most donor areas possessing between 5,000 and 7,000 grafts. Some, such as Dr. Unger, feel that we can obtain reasonable coverage with a density between 20-30 grafts per cm^2 performed in two sessions. Others feel we need to greater density to achieve the illusion of fullness. My personal experience is that the frontal area alone may generally achieve a full appearance with a range between 2,500 and 3,500 grafts. Obviously, factors such as hair caliber, the calculated density, and patient expectations play a role in graft counts. Personal experience also reflects that a much higher density closer to the original density is required to achieve the illusion of fullness in the crown area. A physician might find that a crown may require a minimum of 40-50 grafts per cm^2 to appear full. If you combine frontal loss and crown loss, as typically seen in the NW 3V, the entire donor area may be easily exhausted. Still, the patient may continue to lose his original hair in the recipient area. As suggested, it is also possible to lose hair in the donor area, which is really not permanent in many individuals. Thus, the grafts relocated to the recipient area may thin over time.

As pointed out by both Drs. Bill Reed and Walter Unger, strip harvesting is performed in the heart of the donor area where permanence is more predictable. Dr. Unger notes that with FUE we must harvest a much larger donor area to achieve a comparable number of strip-harvested grafts. Dr. Haber finds that it's not possible to harvest 2,500-3,000 grafts using FUE and stay inside the traditional "safe zone." Other physicians skilled in FUE have shown that large numbers of grafts may be removed from the "safer donor zone."

Physicians often publish photographs showing FUE extractions outside the traditional safe donor zone. Harvesting outside the SDA provides the greatest support for strip harvesting to many. In addition to the potential that grafts outside the traditional safe zone will cease growing, many strip harvesting advocates such as Dr. Unger express concern: How cosmetically satisfactory will FUE scars be if the patient *loses* all hair surrounding those scars?

Dr. Unger's opinion is that there are three goals in hair transplanting:

1. Naturalness (in the donor and recipient area)
2. Permanence of hair in the recipient area
3. Appropriate recipient area hair density

Dr. Unger has previously published the safer donor height in millimeters based on age and location in the donor area (see Unger Safe Donor Zone below). Until we have an opportunity

to evaluate the consequences of harvesting outside the traditional safe donor zone, many FUE proponents might be wise to follow Dr. Unger's advice.

Unger Safe Donor Zone

	65-69	70-74	75-79	+80
Anterior	33	24	29	22
Temporal	80	55	62	59
Parietal	97	76	79	81
Occipital	86	60	69	62

Of course, the alternative arguments for harvesting outside the traditional safe donor zone include the following:

1. Patients want more hair in their balding areas when they are young.
2. Only patients headed to a NW 7 will have significant loss on the sides of the scalp.
3. If the hair is prone to falling out one day, at least the patient got the maximal benefit from it most when he was young by relocating it to the bald area.

Of course, the flip side to this argument hinges on Dr. Unger's three goals for hair transplantation, one of which is permanence in the recipient area. We have already noted, however, that the donor area is not necessarily permanent to begin with.

Ultimately, we need to focus on methods to achieve all of Dr. Unger's goals. If we consider that 60% of men will become a NW 3V or worse by age 69, the majority of men have the potential to exhaust the traditional donor supply. Therefore, we must find ways to maximize donor harvesting to produce acceptable density, achieve permanence in our grafts, and maintain naturalness. We all strive for the same goals. We simply have not agreed on a surgical solution. Perhaps there is no solution.◆

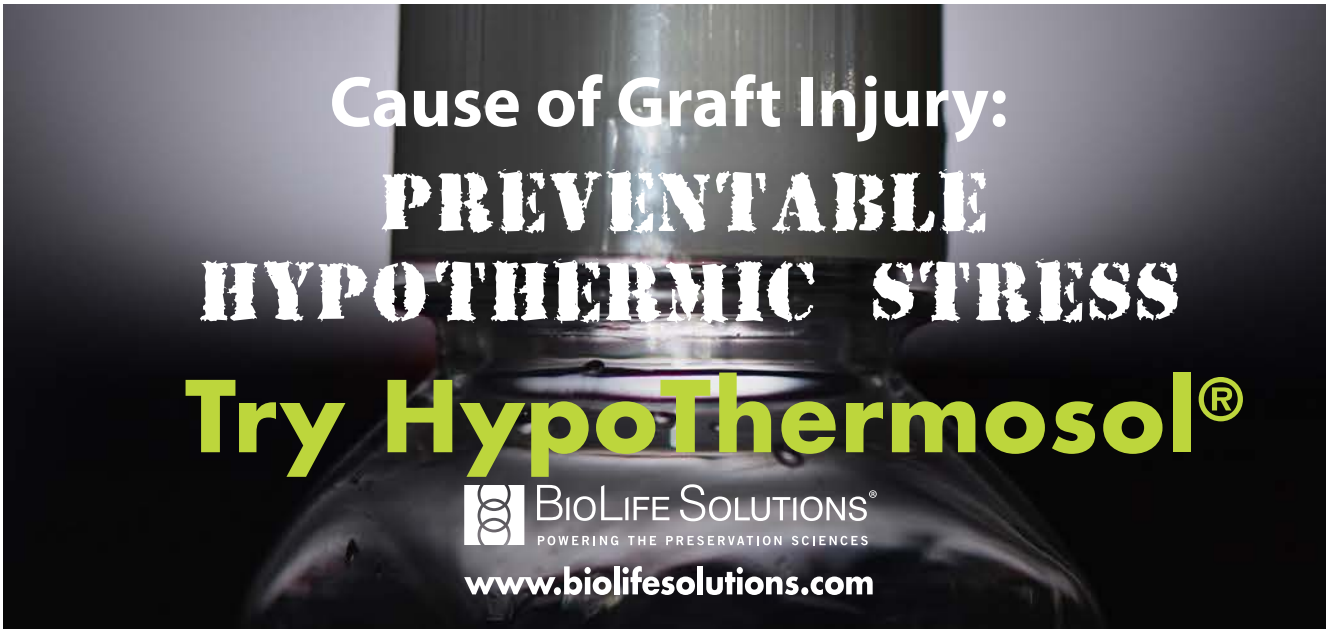
Commentary from Dr. Walter Unger *wung@bellnet.ca*: John Cole is clearly trying to produce a balanced article and in the main he has done an admirable job BUT…he has reported the impressions of various commentators and in trying to produce "balance," he has produced a document that I believe leaves the readers to conclude that there is enough argument on both sides of the FUE/strip debate that neither is better than the other with regard to harvesting the largest percentage of most likely permanent hairs, i.e., the permanence of the results. Thus, he implies, the physician can choose either FUE or FUT and be on just as safe long-term grounds. I believe that is possible BUT with a very, very important proviso: to have that effect in a very large number of younger men in their 20s and 30s, the physician must either:

1. harvest grafts within the Safest Donor Area (SDA) I described after examining 328 men aged 65 years or older,[1] or
2. harvest grafts with extra caution and good judgment, in some men, and I would guess in virtually no women, within Cole's SDA (designed after studying 64 Caucasians, average age 36 years, and 30 Koreans, average age 37 years).

I also believe that in many men, you can safely "cherry-pick" a limited number of 2- or 3-hair FUs outside of my SDA—*provided you keep in mind that as the fringe hair density in such outside areas decreases with age, you will have effectively further reduced whatever hair density would have been present if they had not been removed.*

It should be made very, very clear that we are discussing only men, NOT women—who nearly always have far more limited SDAs. I hope John agrees that virtually no women (there are always exceptions) should be treated with FUE.

Editor's note: This is a fascinating discussion with some very clear thinking on both sides of the argument. No matter where you stand in this discussion, we all have to agree that, regardless of harvesting method, the donor area must be managed carefully and due respect given to the progressive nature of AGA and loss of hair from the donor region. I must also point out that this discussion does not incorporate the expansion of donor supply that comes with FUE through the potential to harvest beard and torso follicles for use on the scalp. —RHT



How I Do It

Timothy Carman, MD *La Jolla, California, USA* tcarmanmd@ljhr.com



As pervasive as the promotion and marketing of most every plastic and cosmetic procedure there is, most claims and results are supported by the ever present "before" and "after" photos, which are shown in ubiquity in publications, textbooks, and, most saliently, on the internet. I am sure that most of us appreciate that even subtle variations in lighting, technique, and angulation can produce misleading outcome results—both intentional and unintentional. When we, as a Society, strive to provide transparent and honest demonstration of the outcomes of our clinical work, it reflects on our mutual commitment to ethical and consistent patient care standards. Below, Dr. Steve Gabel shows us his personal choice of technique for standardizing his approach to photo-documentation of patient progress in the setting of Hair Transplant Surgery.

Techniques for Consistent Before and After Photographs

Steven Gabel, MD, FACS *Hillsboro, Oregon, USA* drgabel@gabelcenter.com

Proper photo documentation for the hair restoration physician is crucial for several reasons including the ability to objectively monitor and assess a patient's results with medical and/or surgical treatment modalities, education, marketing, and medico-legal documentation. Modern digital cameras have the capability to produce outstanding photographs for amateur and professional photographers alike. Equally important is the setting and manner in which the photographs are taken in. This article presents the method that I use to take consistent, high-quality photographs of my patients.

Standardizing the photographs in hair restoration allows for specific comparisons to be made. To accomplish this, the patient's head position and angles must be the same each time the patient is photographed. If the before and after photographs are not taken at the same angles and head position, it is very difficult to accurately measure the treatment outcome, and the photographs may not give a truthful representation of the results. Therefore, it is essential to photograph each patient in a similar manner in terms of camera and lens settings, lighting, background color, head position, and head tilt angle.

In my clinic, I have a dedicated photography room. The setup consists of a Nikon D300 digital SLR camera on a tripod with a wired remote shutter release to minimize camera shake, two fluorescent Bowens Tri-Lite lamps with light diffuser for constant lighting without flash, and a background wall painted in a medium shade of blue. I use different camera lenses for either portrait or close-up photographs. The fluorescent lamps are placed at 45° angles from the patient to minimize any shadows against the background (Figure 1). I do not use the overhead lights. The ISO, aperture, and shutter speed have all been manually set up based on the distance I have the patient sit from the camera, light intensity, the temperature of the fluorescent lights, which is programmed into the camera, and the overall look I am trying to achieve with the photographs.

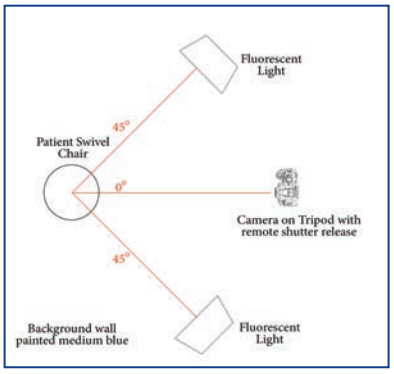


Figure 1. This diagram demonstrates the position/angles of the camera and fluorescent lights in relation to the patient.

To achieve consistency of the photographs in relation to patient positioning and head tilt angles, I have the patient look at specific, round, object markers that I have attached to the camera tripod and stand-up fluorescent lights (Figure 2). The markers are easily seen and they give the patient an object to focus on to duplicate the same head position for each shot. When taking photographs, I instruct the patient to look directly at the markers with their eyes in a neutral, primary gaze position. Once steady, I am then able to easily make small adjustments to their head position and angle, if needed. The most common error I have seen is that patients will look at the markers with either a superior or inferior gaze of their eyes, which requires an adjustment in their head tilt angle so they are looking straight at the marker. Additionally, having the patient sit on a chair that swivels 360° helps facilitate the positions for all the required shots.



Figure 2. These photographs show the actual set up of the photography room with a blue background painted on the wall. There are round, gold object markers on the tripod and fluorescent light stands for the patient to look at in primary gaze that establish the correct head tilt and direction.

The standard views that I photograph for each patient (both portrait and macro close-up shots) are the following:

1. Directly facing the camera (Figure 3, photos 1-4)
   - straight/level with close-up
   - 30° head tilt down
   - 70° head tilt down

2. Facing 45° angle (left and right profiles) from the camera toward the stand-up lights (Figure 3, photos 5-12)
   - straight/level with close-up
   - 70° head tilt down with close-up

3. Facing 90° angle (left and right profiles) from the camera toward the room side walls (Figure 3, photos 13-16)
   - straight/level with close-up

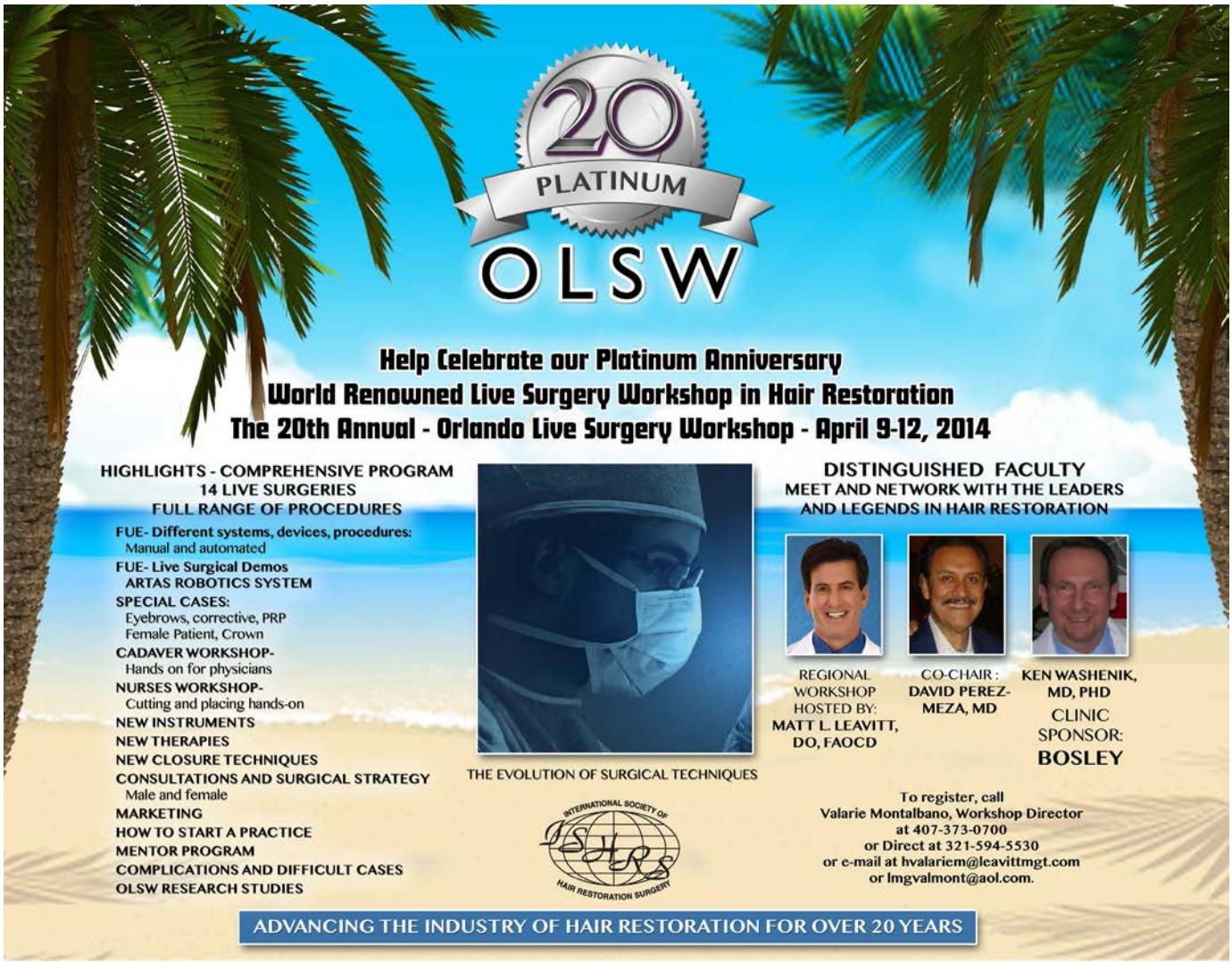
4. Facing 180° angle from the camera toward the back, blue wall (Figure 3, photos 17-20)
   - donor area
   - donor area scar close-up if had previous surgery
   - crown
   - patient looking directly up to ceiling for top view

If indicated, I will also take photographs of the patients parting their hair either vertically or horizontally depending upon the unique characteristics of the patient. This is especially useful in women where vertical parts are made centrally and laterally in the frontal and mid-scalp areas. After the photographs are taken, I review the images for quality, and retake any that are not optimal.

Achieving photographic consistency requires a dedicated space where all the elements of the shoot are constant. Object markers placed at specific locations give the patient an exact point to focus on, which helps to standardize head positions, producing consistent images each time photographs are taken. This technique allows for an accurate representation and measurement of the patient's photographic progress and results.◆

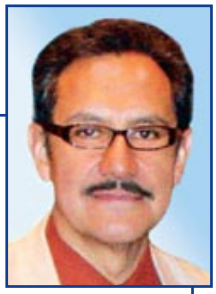


Figure 3. Photos 1-20 show the standard views taken for each patient.



Meetings and Studies

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The Asian Association of Hair Restoration Surgeons (AAHRS–Asia) in conjunction with the Association of Hair Restoration Surgeons (AHRS–India) organized the 3rd Asian & 5th Indian Annual Meeting of Hair Restoration Surgeons—HAIRCON 2013. The theme of the meeting was "Hair 360°," which included all aspects of hair loss and hair restoration. Donor harvesting with FUE manual and motorized devices and Restoration Robotics were some of the highlights. Kudos to the organizers and faculty and of this very successful meeting.

Review of the Joint 3rd Asian & 5th Indian Associations of Hair Restoration Meeting—HAIRCON 2013

Bengaluru, India • November 22-24, 2013

Kapil Dua, MD *New Delhi, India* drkapildua@gmail.com

The Asian Association of Hair Restoration Surgeons (AAHRS–Asia) and the Association of Hair Restoration Surgeons (AHRS–India) recently jointly held the 3rd Asian and 5th Indian Annual Meetings—HAIRCON 2013.

It was a very successful meeting; well appreciated by over 250 delegates from India, Asia, and other parts of the world. The theme of the conference, Hair Transplant 360°, covered all the aspects of Hair Restoration including hair anatomy, diagnosis of hair loss, medical management, FUT, FUE, and complications and innovations in the field of hair restoration. The guest faculty included Dr. Robert True from USA (who was also the ISHRS representative), Dr. Jose Lorenzo from Spain, and 50 more distinguished speakers from Asia and India. Dr. Sanjiv Vasa, Asian Society President, and Dr. Venkataram Mysore, AHRS President (both from India), were the Congress Chairmen.



Lighting of the lamp to open the meeting

The Scientific Program, chaired by Dr. Ali Abbasi from Iran and Dr. Kapil Dua from India, and assisted by Drs. Sandeep Sattur and Anil Garg, was a dynamic program that included basic and advanced courses, breakfast with experts, innovation and award paper sessions. The program covered such topics as body hair, beard hair, FUE mega sessions, platelet rich plasma, robotics, and the like.

November 22, 2013

The Basics Course, directed by Dr. Anil Garg, started with a lecture on Hair Anatomy & Hair Cycle delivered by Dr. Aman Dua. The beginners were given a glimpse of all types of hair loss in the lectures on medical management of patterned and unpatterened hair loss. Dr. Rajesh Rajput from India described in detail how to start a hair transplant practice, including the challenges faced by beginners. Special emphasis was given to the role of the surgical assistants and how to improve their skills.

In the video workshop, Dr. Sandeep Sattur highlighted which patients are candidates for hair transplantation and which patients should be refused surgery. Dr. Sanjiv Vasa discussed the role of magnification and instrumentation in the Operating Room. Dr. Ali Abbasi from Iran shared his experiences about technique of anesthesia and anesthetic agents, their dose and their side effects. Dr. Damkerng Pathomvanich from Thailand discussed the finer details of strip harvesting. The master of FUE, Dr. Jose Lorenzo from Spain, shared tips and tricks of manual FUE. Dr. Kapil Dua spoke on motorized FUE. In addition, the legal aspects in surgery including documentation, photographs, and consent were examined.

The eight-hour Advanced Course headed by Dr. Sattur was for experienced hair restoration surgeons. Advances in management of hair loss utilizing newer tools for diagnosis and surgical planning were discussed. Dr. Venkataram Mysore, Congress President, reviewed scalp pathology and the role of biopsy in cicatricial alopecia.

Drs. Lorenzo and Aman Dua elucidated practical problems we encounter even when we are quite experienced in surgery: how to deal with grade II baldness in young age and vertex, mega and giga sessions, and female hair transplantation. Dr. Pathomvanich outlined refinements and finer nuances in all steps of strip surgery, ranging from managing a wide strip to planning a giga session. Videos by Drs. Lorenzo, Kapil Dua, Bishan Mahadevaiah, and Aman Dua were very effective in demonstrating detail in FUE, including different types of punches and mode of extraction, the application of FUE in non-scalp areas, and use of beard, chest, and pubic hair.

In a session on planning in difficult cases, Dr. Manoj Khanna, Immediate Past President of AHRS–India, illustrated his approach to implantation in scars, hair transplant in women, and hairline design. Dr. Pathomvanich defined design considerations in different ethnicities.

To round out the course, post-operative management and complications were discussed.

The advanced course would not have been complete without insights into the legal and commercial aspects of hair transplant practice provided by legal expert, Dr. Jayashree Venkataram, and Dr. Niteen Dhepe. The role of advertisement in hair transplant practice and the corporatization of the hair transplant practice were discussed in this session.

At the end of the day, the delegates of both courses got a glimpse of Robotic FUE through a half-hour video.

A program, "Dances of India," showcasing dances from all over India, was the highlight of the evening celebration. A special presentation marked the release of "Baldness and Hair Restoration—Facts & Myths" written by the AHRS Board of Governors for public education.



Meeting attendees



International faculty

November 23, 2013

Day 2 started off with Innovations and advancements. The session included a new hairline device by Dr. Pathomvanich, a new spreader forceps for strip harvesting by Dr. Kamran Jazayeri from Iran, a new FUE suction operated device by Dr. Anil Garg, and a multiple slit maker by Dr. Pradip Atadoria from India.

Dr. Sattur discussed medical hair restoration, including cell therapies, and Dr. Manas Chatterjee presented, "The New Age 5-α Reductase Inhibitors."

A highlight of the day was the Vasa Golden Peacock Oration delivered by Dr. Robert True, in which he shared "Learnings & Yearnings in Hair Transplantation" from his three decades of experience in this field. He shared the journey of hair restoration from the days of scalp reductions to FUT to today's FUE and body hair transplants.

In the Donor Management in FUT and FUE session, the role of hyaluronidase in increasing scalp laxity was discussed by Dr. True. Dr. Aman Dua contrasted different techniques of FUE. Dr. Lorenzo talked on FUE planning in advanced grades of baldness. Dr. True presented his approach to second session of FUE. Dr. Kuldeep Saxsena outlined FUE from body and scalp. Dr. Kapil Dua focussed on the limitations of FUE that are not usually discussed. And, echoing Dr. True's presentation, Dr. Ramachandran shared his journey of three decades of hair transplant surgery from the era of plugs to FUT, to today, and how is he again back to FUE.

A panel discussion on donor area depletion in FUT and FUE highlighted the limitations of both techniques. In the Recipient Area Issues session, Dr. Pathomvanich illuminated issues in vertex transplantation and Dr. Imagawa from Japan delineated techniques for transplantation into scars.

The Video Session presentations included "Direct Hair Transplantation" by Dr. Arika Bansal, "Suction Assisted Hair Transplant" by Dr. Kuldeep, "Hydrostatic Dissection of Follicles in Strip" by Dr. Vivek Saxsena, and "How to Correct the Hairline Using FUE" by Dr. Irene Lin from Taiwan.

The prestigious AHRS–India Oration by Dr. Manoj Khanna, recalled "pearls and pebbles" he encountered in his career. He shared the contribution of all the teachers who have played a role in his development as top-notch surgeon.

The Potpourri Session comprised presentations on grey hair, body dysmorphic disorder, and hair transplantation in Vitiligo, Alopecia Areata, and Frontal Fibrosing Alopecia.

"Trichophytic vs. Non-trichophytic Closure" by Dr. Niteen Dhepe was a well-designed study demonstrating the advantages of trichophytic closure. Dr. Aman Dua presented her results in studying FUE in patients with prior strip surgery versus those without prior surgery, and reported that it was easier to do FUE in cases that had already undergone strip as the follicle transection rate (FTR) was less, and the average number of hairs per graft and the number of grafts extracted per session were more.

The evening Gala Dinner & Dance was highlighted by a song by Dr. Pathomvanich. The crowd was entertained by talented hair transplant singers—Dr. Amitabh and Dr. Sajal Haldar. And Dr. Kapil Dua, as master of ceremony, kept the spirit lively.

November 24, 2013

The final day started with Breakfast with Experts session. Eleven experts discussed important topics such as setting up a hair transplant clinic, manual FUE, motorized FUE, strip harvesting, body hair transplant, vertex planning, avoiding donor scarring, recipient insertion, internet, marketing, redo cases, mesotherapy, and stem cells.

This was followed by an Unconventional Donor Area session, which included body and beard hair by Dr. Aman Dua and eyelash transplantation by Dr. Ali Abbasi. Included in the operative care section were complications and post-op instructions by Dr. Kapil Dua, and monitoring of cases in HTS, by Dr. Sattur. Dr. Mysore delivered an interesting paper on patient satisfaction in hair restoration.

For the first time at a HAIRCON meeting, an award paper session was held in which a jury judged papers. This best paper prize went to Dr. Sukesh for his paper, "Comparative Study on Trichoscan in Androgenetic Alopecia and Telogen Effluvium in Women."

Adjunct therapies, such as vitamins, diet, and lasers, were discussed in the next session. New perspectives were discussed next. The talks included application of hyaluronidase by Dr. Wen Yi Wu from Taiwan; PRP in hair restoration by Dr. True; remodeling of FUE grafts by Dr. Suneet Soni, and facial hairs for hair transplantation by Dr. Ravi Kant Bhushan.

Dr. Mysore moderated an open topic panel, which addressed daily problems being faced by physicians but not covered in the sessions. The session was free and frank.

The last session in the program was a very interesting written quiz conducted by Dr. Patwardhan in multiple-choice question format. Dr. Mysore solved a first place tie between two of the delegates using an oral question.

The foreign faculty not only participated in the scientific program, but also got a chance to go through the palaces and sightsee. The Exhibitors were overwhelmed by the huge response of all the doctors. The feedback received by the delegates was very favorable. The largest hair restoration conference so far in five years ended on a highly satisfactory note.◆

Regional Societies Profiles

It was my pleasure to meet Dr. Sandeep Sattur, MBBS, MS, MCh when I attended the HAIRCON 2013 meeting in Bangalore last November. I thought the meeting was very well done and I came away being excited about hair restoration surgery in India. It is my pleasure to share my interview with Dr. Sattur, who is the current President of the Association of Hair Restoration Surgeons–India.

Dr. Sattur, located in Mumbai, is a plastic surgeon who has practiced hair restoration surgery almost exclusively for the past 14 years. He is a member of the ISHRS and one of the founders of the AHRS, India. He is very active in teaching and has authored book chapters and articles on hair restoration surgery. I can tell you, from firsthand experience, he is a top-notch lecturer. He can be reached at drsattur@hairrevive.com.

—Robert H. True, MD, MPH

Association of Hair Restoration Surgeons–India



Dr. Sandeep Sattur

RT: What is the name of your hair society and when was it founded?

SS: The Association of Hair Restoration Surgeons–India (AHRS). It was registered in October 2008 and came into being February 2009. The founding members were: Drs. Sanjiv Vasa, Tejinder Bhatti, Rajesh Rajput, Sandeep Sattur, Kapil Dua, Aman Dua, Mysore Venkatram, Ashok Vardhan Reddy, Laksyajit Dhami, Ravi Joshi, K. Ramchandran, and Puli Ravindra Reddy.

RT: Who are the officers?

SS: For 2014, I am the President; Dr. Narendra Patwardhan, Vice President; Dr. Kapil Dua, Secretary; Dr. Ashok Vardhan Reddy, Treasurer; and Dr. Venkataram Mysore, Chairman Ethical Committee & Immediate Past President.

RT: Are there any medico-political issues in India?

SS: Medico-political problems as I understand, stem from untrained and/or unqualified doctors practicing hair transplantation. I think it is a universal problem. The medical council of India does not have specific guidelines for practice of hair restoration surgery. But, having a basic qualification of Bachelor of Medicine and Bachelor of Surgery (MBBS) is considered adequate for performing simple office-based surgical procedures on an outpatient basis. As an association, we mandate a minimum qualification as graduation from allopathic stream of medicine and surgery. We have among our members plastic surgeons, dermatologists, ENT surgeons, maxillo-facial surgeons, and MBBS graduates.

RT: What about advertising?

SS: According to the code of ethics formulated by the Medical Council of India, soliciting of patients directly or indirectly, by a physician, by a group of physicians, or by institutions or organizations is unethical. A medical practitioner is, however, permitted to make a formal announcement in the press when starting, joining, suspending, or resuming practice, changing of type of practice or address, or to declare charges.

Despite these regulations, doctors do advertise and some of them are quite misleading. As an association, we had complained to the local medical councils as well as the Advertising Standards Council (Dr. Rajesh Rajput was instrumental in initiating the complaints), but due to a lack of proper guidelines and poor enforcement, the doctors or clinics continue to advertise.

All of us agree that some kind of advertising would be appropriate, but that the chief purpose of any advertisement for a doctor's services should be to present information (about the doctor and his or her services) that is reasonably needed by any patient to make an informed decision regarding his condition and the treatment required. This transparency actually augurs well for the entire health care system. If the purpose of advertisement is only to lure patients with misleading projections, then that is something that has to be condemned. As an association we are in the process of formulating guidelines for members regarding advertising their hair restoration practices.

RT: Tell us about hair restoration surgery in India.

SS: The last five years has seen a change in perception of the public of hair restoration as a specialty. Skepticism has definitely given way to an improved acceptance, but we have a long way to go. Most doctors who have practices restricted to hair restoration are fairly busy. Other doctors who have a broader base of practice have to fit in hair restoration in their practice. We do not have practice census statistics, but a general estimate of most hair transplant practices would be 60% of surgeries are strip FUT and 40% FUE. Most hair transplant surgeons who started their practices a decade or more ago still have a bulk of their hair transplant surgeries with the strip technique. Doctors who have started their hair restoration practice more recently favor FUE. My observation is that doctors coming from nonsurgical backgrounds tend to choose FUE over strip surgery. Patients are increasingly demanding FUE over the strip surgery, as they perceive it as being less invasive. Both of these factors could be responsible for the growing popularity of FUE.

At present, there are no accurate statistics on the number of doctors in India offering hair restoration surgery. Many doctors offer hair transplantation as part of a more general practice. Most plastic surgeons and dermatologic surgeons offer hair restoration as one of their services, and some are not a part of mainstream hair restoration specialty practice. We have close to 200 members in our society and the numbers are growing.

RT: Are any robots used?

SS: As far as I am aware, there is no installation of ARTAS or any other robotic device in India. But doctors do promote suction-assisted devices used for FUE as "robotic hair transplantation."

RT: Is anybody investigating cell-based therapies?

SS: As of today, there are no clinical trials studying cell-based therapies for hair loss registered on the Clinical Trials Registry, India. However, one year ago, we had conducted a clinical trial evaluating the role of Human Platelet Lysate in hair loss management.

In our November 2013 newsletter, the AHRS published a position statement on cell-based treatments:

"The AHRS believes that with existing evidence … and research stem cells, hair cloning and multiplication cannot be considered as acceptable treatments for any type of hair loss. Any physician wishing to practice such treatment should do so as an experimental treatment after obtaining proper ethical clearance and permission from appropriate governmental agencies as per standard guidelines for clinical trials. The association strongly disapproves of advertisements in this regard and cautions the public to beware of misleading claims."

RT: Where is hair restoration headed in India?

SS: Hair restoration in India is on the cusp of an explosion. In the last two years, there has been a significant increase in the number of doctors, from varied specialties, wanting to get trained in hair transplantation. The number of clinics offering hair loss treatments has almost doubled in just the last two years. Even the advertisements for hair loss treatments, in local media, have increased sharply in the last couple of years. I feel it is one of the fastest growing subspecialties of medicine in India.

RT: Who are the doctors that are active in education in India and internationally?

SS: There are many who actively participate in our meetings. Those who are perhaps the most active include Drs. Sanjiv Vasa, Rajesh Rajput, Mysore Venkataram, Manoj Khanna, Sandeep Sattur, Kapil Dua, and Aman Dua. All are the national faculty. And Drs. Vasa, Rajput, and Kapil Dua have been faculty at ISHRS meetings. Most of them conduct routine training programs at their centers as well.

RT: Do you have regular meetings, conferences, and workshops?

SS: HAIRCON is the annual scientific meeting conducted under the aegis of AHRS–India. We are in the process of planning annual live surgery workshops. HAIRCON 2014 is scheduled for September 19-21, 2014, in beautiful Goa, at the Marriott Resort & Spa.

RT: What would you say are the strengths of your society?

SS: We are a young society formed with the objective of promoting the development of hair restoration surgery along sound, scientific, ethical, and progressive lines. If we look at member strength and the attendance for our annual meetings, there has been a membership increase of almost 20% per year. We are growing at fair pace. Our strength lies in the fact that we are adaptable to changing times and have the right mix of experience and youth to give direction to the association. We have, through our annual meetings, encouraged and provided a platform for upcoming hair restoration surgeons to present their work, research, and innovations at the national level. Last November at HAIRCON 2013, we launched the AHRS Hair News Bulletin (Dr. Anil K Garg, Editor), a quarterly periodical for the association, and the development by Dr. Anil Garg of software for hair transplant surgeons.

RT: What can the ISHRS do to help the AHRS?

SS: The ISHRS can help by recognizing the regional society meetings, helping regional society meetings with visiting faculty from the ISHRS, and by supporting and endorsing regional workshops held under the aegis of the AHRS. Also, in continuation with our representation in the Global Council, we would like to reiterate our request to the ISHRS—to route membership applications for the ISHRS through the AHRS–India.◆

Editors' note: As you all know, we are new at editing this journal, so last issue we omitted to publish the accompanying photograph of Dr. Buttafarro, president of the Italian Society of Hair Restoration (ISHR), with his interview regarding the Italian Society. Dr. Buttafarro has been a gracious host to me and many other visiting ISHRS members, and has been instrumental in raising the standards of hair restoration in Italy. Dr. Buttafarro, along with Dr. Pietro Lorenzetti, will co-host the next ISHR conference to be held in Syracuse, Sicily, 26-29 June 2014.



Dr. Franco Buttafarro

Our apologies, Dr. Buttafarro, and all the best with your upcoming conference.

—Mario Marzola and Bob True

Letters to the Editors

Re: Standardization of the Terminology Used in FUE

Bertram Ng, MBBS Hong Kong *bertram@hairtransplant.hk*

Thanks to the ISHRS FUE Research Committee for their attempt to standardize the terms used in FUE. The articles (Parts I and II) that appeared in two issues—September/October 2013; 23(5):165 and November/December 2013; 23(6):210—were very well written, paying attention to every minor detail. Unfortunately, sometimes when we look too close at a tree, we miss the jungle. I was disappointed to find out that one of the most crucial and debatable term was missing—the meaning of a graft.

To my understanding, a graft is the transplanted unit, whether it is a minigraft or follicular unit. In the early era of FUE, the harvestable number of grafts per session was less than that in FUT. In order to create an illusion of competency, some FUE practitioners came up with a brilliant idea. They created a new unit for communication, hair: "Dr. X using FUT offers you 1,500 grafts; I can use FUE and give you 1,800 hairs."

Also, "hair" made FUE appear to be more competitive in price: "Dr. Y charges you 3 USD per FUT graft, I only charge you 2 USD per FUE hair." This misleading terminology is adopted by many hair transplant centers in Hong Kong and Mainland China.

The patients are not given fair piece of information to plan their procedure. Once, a 40-year-old Class V gentleman came for evaluation. Looking at his limited donor site I promised him around 2,500 grafts using FUT. He paid a deposit and scheduled a procedure. A few days later he returned and demanded a refund. He accused me of incompetence as the other center promised him no less than 3,000 hairs.

Many times patients with previous FUE procedures came for a second procedure. Less than expected density was always the issue. Even Class III patients had 3,000 to 4,000 units transplanted. When they asked how successful their last procedures were, I could not make any comment. Were they referring to grafts or hairs? Why can't we speak the same language? Can the committee do something about this?◆

Note from Dr. John Cole on behalf of the FUE Terminology Committee: The goal of the Terminology Subcommittee of the FUE Research Committee (FRC) is to define a terminology specific to FUE hair transplantation. We did not attempt to define generic terms such as hair nor graft, as neither is germane to the theme of our work. Both hair and graft are terms relevant to all forms of hair transplantation rather than specific to FUE.

We believe you have adequately addressed your concern with your well-constructed letter to the editor. Individual groups and physicians have manipulated the terms hair and graft for decades as a marketing and sales tool. Our purpose did not include the ethos of a moral compass. Thank you for adding your comments.



Hair's the Question*

Sara Wasserbauer, MD *Walnut Creek, California, USA* drwasserbauer@californiahairsurgeon.com

*The questions presented by the author are not taken from the ABHRS item pool and accordingly will not be found on the ABHRS Certifying Examination.



Try this experiment: Place 20 grafts YOURSELF every day for the next week. Tough to even think about, right? Knowledge regarding the proper care and feeding of grafts is essential in our profession, yet several key components are often delegated to our technical staff—particularly graft placement. What are the best practices for the care and feeding of grafts during this critical phase of surgery? This column is dedicated to the theme of graft placement with emphasis on what damages grafts. So go ahead and test yourself (and maybe even your staff…)!

Graft Placement

1. Which of the following injuries during placement is associated with poorest graft growth?
   A. Desiccation
   B. Crush injury
   C. Transection
   D. Excessive manipulation

2. As a general rule, if they are placing grafts directly onto a gloved finger before placement, hair technicians should take ONLY the number of grafts that they can place within
   A. 30 seconds
   B. 1 minute
   C. 1 minute 30 seconds
   D. 2 minutes

3. Which of the following is an issue that technicians who place grafts directly on their (gloved) fingers before placement should be aware of?
   A. Grafts have a tendency to slip off gloves and into the placement site, so staff should only take a few grafts at a time.
   B. All grafts should be lined up in the same direction to facilitate speed of placement.
   C. Heat generated from their fingers will speed up the metabolism and desiccation of the grafts.
   D. Grafts can absorb the saline (or holding solution) while on the finger, and thus any excess solution should be drained off before being taken for placement.

4. Which of the following has been reported as a successful method for reducing popping during implantation WITHOUT excessive manipulation?
   A. Use of implanter devices (Shiao implanters, Choi implanters, Lion implanters etc.)
   B. Surgical Super Glue (cyanoacrylate surgical adhesive)
   C. Two-handed technique using two forceps to guide the graft into place and pressure with a gauze pad in between
   D. Tumescence with normal saline

5. Which of the following has been reported as a successful method for managing "slippery grafts" during implantation?
   A. Surgical Super Glue (cyanoacrylate surgical adhesive)
   B. Use of implanter devices (Shiao implanters, Choi implanters, Lion implanters etc…)
   C. Two-handed technique using two forceps to guide the graft into place and subsequent pressure with a gauze pad
   D. Tumescence with normal saline

6. Which of the following techniques to control bleeding may result in poor growth?
   A. Pressure with a gauze pad after each graft is placed
   B. The "Stick-and-Place" technique
   C. Chubby grafts
   D. Tumescence with "Superjuice" (1:25,000 epinephrine in saline)

7. One of the advantages of using implanter devices (instead of hair technicians with forceps) to implant grafts is
   A. Ability to plant graft fragments
   B. Prevention of crush injury to the graft
   C. Fewer staff needed in the OR
   D. Prevention of popping when placing grafts at the hairline and other dense areas

8. What is the fastest time (as reported in the *Forum*) that implanter devices have been documented to place grafts?
   A. 100 grafts per hour
   B. 500 grafts per hour
   C. 1,000 grafts per hour
   D. 1,500 grafts per hour

9. Sparse and kinked hair growth has occurred in several of your patients 6-12 months after their surgeries. You suspect that several of your new hair technician staff may be
   A. Causing crush injury to the grafts during implantation
   B. Allowing the grafts to desiccate during placement
   C. Placing grafts too deep below the surface
   D. Placing a graft into a site where a graft has already been placed (piggybacking)

10. Small pits surrounding the follicles of otherwise normal hair growth have occurred in several of your patients 6-12 months after their surgeries. You suspect that several of your new hair technician staff may be
    A. Causing crush injury to the grafts during implantation
    B. Allowing the grafts to desiccate during placement
    C. Placing grafts too deep below the surface
    D. Placing a graft into a site where a graft has already been placed (piggybacking)

11. Ingrown hairs have become a problem in your practice and the pustules seem to be occurring on only one side of the recipient area for most patients. Assuming you have two technicians placing grafts and that they typically favor one side only

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Hair's the Question from page 71

(i.e., Technician #1 places the right side while Technician #2 places the left), what should you look for during placing?

A. Causing crush injury to the grafts during implantation
B. Allowing the grafts to desiccate during placement
C. Placing grafts too deep below the surface
D. Placing a graft into a site where a graft has already been placed (piggybacking)

Answers

1. **A.** This one was a "lob" so you can hit at least one of these questions "out of the park," but ALL of the answers result in graft injury and, in particular, are mistakes made by novice placers.
2. **A.** Desiccation happens faster than any of us realize—and these numbers were pointed out by Dr. Bill Rassman in the *Forum* years ago. Train your staff (or yourself) either to use a container that keeps the grafts as moist and as cold as possible, or to take fewer grafts more often. Losing the shine to a graft is a sign that it is drying out, and you can consider using humidifiers in the Operating Room as Dr. Jerry Cooley does to raise the ambient moisture level. The use of implanting devices can also reduce desiccation.
3. **C.** B is a good idea, too—it definitely speeds up the process to have them all lined up, but having them in random directions will not necessarily hurt them. Staff SHOULD only take a few at a time, if only to avoid the pitfalls in answer C, but slipping off the finger or absorbing holding solution are not major complicating issues.
4. **B.** I myself have never done this, but the case report is a great read (see references). The two-handed technique (answer C) is VERY useful, as is holding the graft in with a gauze pad while placing the next one, but it DOES involve additional manipulation of the grafts. Implanters reduce manipulation, but some reports show increased popping, especially when the grafts are placed close together initially (although going back for a second pass and interdigitating seems to help). Tumescence of any kind can increase popping.
5. **C.** Additional rinsing and modified forceps are also suggested methods of dealing with this rare but frustrating graft placement situation. I do not know of a situation where a surgeon has tried to solve the problem of slippery grafts with implanters, so any readers out there who have experience with this are welcome to send me comments! (drwasserbauer@californiahairsurgeon.com)
6. **D.** This is particularly true with frequent use as in a "megasession." When hair remains in the area to be transplanted (as in many of our female patients), excessive shock loss may also result from this technique. Bleeding is often a sign of patient discomfort so employing excellent anesthesia, raising the patient from a prone position, uncrossing legs (which increases venous return and thus bleeding) and using some of the above techniques are all options to keep the graft placement part of the surgery on track.
7. **B.** Check out the videos on the www.ishrs.org website and YouTube to see how grafts can be loaded into the implanter device and you see how crush injury is avoided. You do need more staff, generally speaking, so C is incorrect. Popping is a commonly reported but often manageable problem with the use of implanter devices.
8. **D.** It takes a bunch of staff, but it can be done!
9. **A.** You should look for crush injuries to the grafts during implantation.
10. **C.** Ingrown hairs or cysts might also form as a result of this.
11. **D.** An argument could be made that C is also a factor, so I will accept that answer, too. Have your staff mark where they placed on a map of the head; this way, you can trace problems back to individuals quickly and correct poor habits early!

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Message from the 2014 Annual Scientific Meeting Program Chair



Damkerng Pathomvanich, MD *Bangkok, Thailand* path_d@hotmail.com

Our president, Dr. Vincenzo Gambino, recently informed ISHRS membership regarding the cancellation of the Bangkok meeting due to unforeseen political unrest in the area. My heart broke and I was in tears when I received the message. I have spent time to prepare the AAHRS Live Surgery Workshop to coordinate with the ISHRS Annual Scientific Meeting, since it's a win-win situation for both societies. I know Victoria Ceh and her team worked very hard to switch the Bangkok venue to Kuala Lumpur for our 2014 meeting.

Despite the venue change, I can assure you that this year's meeting is going to be the top educational event in hair restoration surgery, and it is not to be missed. It will be very scientific, from basic sciences to advances in technology, new instruments, etc., in hair restoration surgery. We are inviting guest speakers to give us an update and new research on basic sciences, including stem cells and cloning. The newcomer to the field of hair restoration surgery needs to know not only FUE, but he or she should also be able to do FUT. There is no question that FUT has stood the test of time for the last decade with good results in the majority of patients. However, wide strip scars are of concern to the patients and the public, as well as the surgeons, since the patients are unable to cut their hair too short or the scar will be exposed. I believe FUT needs to be taught by experienced surgeons in the field so that others can learn the skills to achieve minimal or acceptable donor scars. This year we decided to add a workshop on FUT only for intermediate and experienced surgeons. FUE is on the rise, the workshops on FUE will remain as last year. Using a combination of FUE and FUT has gained in popularity over the past few years, and whether this should be continue will be extensively discussed.

We will have educational lunch symposiums daily and a boxed lunch will be provided. We welcome you to submit a video, which can be related to new techniques or devices that are useful in your clinical practice. There have been some complaints about "Breakfast with the Experts" being too early due to travelling and time changes, so this year we will not have the breakfast meeting with the expert though "Coffee with the Experts" will remain. I invite all of you to continue to be involved and submit up to two abstracts for consideration for presentation. The deadline to submit an abstract is April 16, 2014, and details can be found on the ISHRS website at www.ishrs.org/AnnualMeeting.html. We are aiming to refine the selected abstract even more, and we will not accept abstracts that say "results pending," etc. Please mark on your calendar the 2014 meeting has changed to October 8-11, 2014, to be held in Kuala Lumpur, Malaysia.◆

Message from the 2014 Surgical Assistants Program Chair



Aileen Ullrich *Hillsboro, Oregon, USA* aileen@gabelcenter.com

I hope everyone's New Year is off to a successful and productive start. Our Surgical Assistants committee is in the midst of creating an educational, engaging agenda with expert speakers for our assistant's program.



Photo from the Surgical Assistants Workshop at the 2013 Annual Scientific Meeting in San Francisco.

On the 2013 ISHRS post-meeting evaluation, we asked physicians what they would like their assistants to learn during our program. The key themes that came through were related to graft survival/growth, interaction with patients, and infection control. These are vital topics to understand and essential to our success as hair transplant technicians.

We will be incorporating these important subjects as well as many others into our program. Our goal is not only to enhance the participant's knowledge base, but also to provide timely, valuable tools and resources that can be used to improve job performance.

I encourage all physicians and assistants to contact me with topic ideas or if you would like to be a part of the program. This is going to be a memorable meeting that you are not going to want to miss. Please join us for the 2014 ISHRS Annual Scientific Meeting.◆



Review of the Literature

Nicole E. Rogers, MD *Metairie, Louisiana, USA* nicolerogers11@yahoo.com



Can Finasteride Affect Fertility? New Data Says "Yes"

Samplaski, M.K., et al. Finasteride use in the male infertility population: effects on semen and hormone parameters. *Fertility and Sterility.* 2013; 100:1542-1546.

Previous research has shown that low dose (1mg) finasteride in healthy men with normal spermatogenesis has not been shown to affect sperm parameters. That being said, there have been isolated case reports of impaired fertility in this same patient population. This led researchers in Toronto to examine the changes in hormone parameters of men taking finasteride, before and after cessation of therapy. They identified 27 men out of 4,400 seen in the Mount Sinai Fertility Clinic who had been on finasteride. The mean duration of treatment was 57.4 months, at a mean dose of 1.04mg/day. They found an average 11.6-fold increase in sperm counts after finasteride discontinuation. No man had a decrease in sperm count. Likewise, there was no change in hormone parameters, sperm motility, or sperm morphology. *Readers should note that this study only included men who presented for infertility treatment. One cannot assume that all men who take finasteride will have the same decrease in sperm count and subsequent increase when they get off the medication.*

Comment: Often during a hair loss consultation our patients ask whether taking Propecia® will affect their ability to have children. Knowing that there are no teratogenic effects linked to a MAN taking finasteride, we enthusiastically reassure them that it is fine to have children. This article suggests that we should include a caveat that if they ARE having difficulties with fertility, they should stop the finasteride before going on to more expensive or invasive therapies.◆

New Breast Safety Data on Finasteride

Bird, S.T., et al. Male breast cancer and 5α-reductase inhibitors finasteride and dutasteride. *J Urol.* 2013; 190:1811-1814.

The post-marketing experience for Propecia® included reports of breast tenderness, breast enlargement, and even breast cancer. This has presented an issue in terms of whether to prescribe finasteride for hair loss in women, especially women who have a personal or family history of breast cancer. Recently, a retrospective study was published in the Journal of Urology to help answer this question, at least in men. The authors examined men enrolled in the U.S. IMS LifeLink™ Health Plan claims database between 2001 and 2009 to better understand the link between breast changes and 5-AR inhibitors. They included men 40-85 years old, who had a primary breast cancer diagnosis on two different dates, and who had undergone mastectomy or lumpectomy with evidence of continuous care (radiation or chemotherapy). They compared these men with controls within 5 years of age (20 controls per case) via logistic regression to see if there was a difference in the rate of 5-AR inhibitor usage. They identified 339 breast cancer cases, matched to 6,780 controls. There was no statistically significant association observed between the use of 5-AR inhibitors and the occurrence of breast cancer.

Comment: Although this study was limited to men, the authors concluded that the development of breast cancer should not influence the prescribing of 5AR-inhibitor therapy. It certainly lets us breathe a little easier when prescribing this class of drugs to women with a family or personal history of breast cancer. Obviously, we must still avoid prescribing to women of child-bearing age given the severe risk of teratogenicity. And for those still in doubt, it will never hurt to recommend annual mammograms.◆

New Enzymatic Assay Predicts Efficacy of Minoxidil

Goren, A., et al. Novel enzymatic assay predicts minoxidil response in the treatment of androgenetic alopecia. *Dermatologic Ther.* 2013(Nov). Epub ahead of print.

One problem with recommending topical minoxidil is that it does not work the same for all people. This is because the enzyme minoxidil sulfotransferase is necessary (in the outer root sheath of the hair follicle) to convert minoxidil to minoxidil sulfate, which is the active ingredient. Researchers in Italy are working on a new assay to help predict which patients will respond best to minoxidil. The enzyme works by coupling the conversion of minoxidil to minoxidil sulfate with p-nitrophyenl sulfate to p-nitrophenyl, which can be quantified by optical absorbance at 405nm, using a spectrophotometer. Thirty-four patients were included in this initial retrospective study, but the authors are working on a larger prospective study to further validate the assay.

Comment: Although this enzyme still appears to be several years away, its use will be helpful not only for physicians, in knowing what treatments to recommend, but also for patients, so that they may save time and money avoiding a medication that may not work for them.◆

⇨ bottom of next page

Surgical Assistants Corner



Ailene Russell, NCMA *Charlotte, North Carolina, USA* arussell@haircenter.com

The first article I ever read in the Assistants Corner of the *Forum* was in 1999 when I was first beginning this journey as a Hair Transplant Assistant. Dr. Bob Limmer's assistant, Carole Lindsay, wrote it about ergonomic cutting. It was in an old *Forum* from 1995 that Dr. Cooley gave to me. I always had a sore neck and a back ache along with cramps in my hands and knew it was related to assisting but really didn't know what to do about it. The article led me to research the stools we used and led us to buying new stools with backs. Of course, back then we were using light boxes the majority of the time so the problem was multi-faceted to say the least! This article led me to marathon reading of the Assistants Corner. I had not been to a conference at this point so I quickly became addicted to this section of the *Forum*! I learned who contributed, and I learned who worked for which doctor and which topics were thought-provoking and which techniques were familiar.

There was an article written by Helen Marzola in June of 1998 covering the ever changing and evolving role of the Assistant. Now, that was truly thought provoking! Helen mentioned that each time she wrote for the *Forum,* she was astounded by the depth of our field. In this *Forum,* she featured an article that was contributed by a French physician written about his assistant of 25 years. This article pointed out how essential a nurse was to the surgeon. At the time his nurse started to work with him, she knew nothing about transplants but quickly proved her ability and her skill. He acknowledged that her "tricks" were what made his surgeries successful and helped his practice grow.

I read and reread these old *Forum*s. I could go on and on and pick an article from all of them because they were all things that pertain to what a Hair Transplant Assistant does. It amazed me how many contributions there were from office managers and physicians who wanted to get the word out. The very foundation of the ISHRS is sharing knowledge…the conferences are the cornerstone in building open communication and the *Forum* is the voice of the assistants and doctors to keep the knowledge growing.

I began my tenure as the Editor for the Surgical Assistants Corner in the *Forum* a little over a year ago. I was a little unsure on how to move forward, and my first submission dealt with CHANGE! As we all know, change is always upon us, and this year we will see some changes to the Surgical Assistants' program at the Annual Scientific Meeting and in our contributions to this journal.

Please allow me to thank all of you for your confidence in me; for reading the articles that I have written over the years and for submitting articles to our section while I represented you. I also want to take a personal moment to thank my surgeon, Dr. Jerry Cooley, for having confidence in my ability, for encouraging me to contribute to the *Forum,* and for taking me to conferences. Last but NOT least, I want to thank all of you, my fellow assistants and supporting physicians, for my award, The Distinguished Assistant Award. It is a true honor.◆

From the Literature *from bottom of page 74*

Book Review

Hair Transplantation: The Art of Follicular Unit Micrografting and Minigrafting, 2nd Edition
Editors: Alfonso Barrera and Carlos Oscar Uebel
2014 Quality Medical Publishing, St. Louis, Missouri
ISBN: 978-1576263723

It has now been 10 years since the first edition of this beautiful textbook was published by Drs. Alfonso Barrera and Carlos Uebel. These dynamic plastic surgeons, both highly skilled in hair transplant surgery, have teamed up to create another momentous hair transplant textbook that summarizes the most cutting edge techniques. In 20 chapters, spread out over 450 pages, the book moves from Fundamentals (Part I) to Techniques (Part II) to Special Problems (Part III) to New Directions (Part IV). Every chapter is packed with beautiful illustrations and very interesting and instructive photographs.

While novices will have plenty to learn from this book, it also provides an overview of advanced techniques, such as combining face and neck lifts with hair transplantation, and combining follicular unit extraction with strip surgery for an "untouched strip technique." One especially instructive chapter was on the use of hair transplant surgery to enhance reconstruction of the face and scalp. This is a mostly surgical book with relatively little emphasis on diagnosis of hair loss or medical treatment of various forms of hair loss.

While the text is very forward thinking, it is also somewhat conservative in its cautionary notes, such as the descriptive photos showing less protective fat around grafts harvested by FUE. Even physicians who don't want to "read" a heavy text will have fun with this new publication. So much can be learned simply flipping through the beautiful color photos and reading the outstanding illustrations and captions. No matter whether your interest lies in hairline design or donor harvesting, you will definitely learn a lot from this book.◆

In fond memory of Dr. Ken Siporin



Ken Siporin was a board certified plastic and reconstructive surgeon with more than 20 years of experience. He added hair restoration surgery to his practice and became an ISHRS member in 2007. Dr. Siporin was an ISHRS OPERATION RESTORE physician, too. As a plastic surgeon, he traveled to Guatemala and Ecuador to treat underprivileged patients with cleft lips, cleft palates, and other deformities. He passed away on December 19, 2013.

I had the great pleasure of working and playing with Ken. On the work side, Ken did an abbreviated fellowship with me and we worked out of several offices together in Beverly Hills. Professionally, Ken was an extremely talented and meticulous surgeon. He had some of the best hands I have witnessed in my 25 years of hair transplantation and cosmetic surgery. He also had incredible artistic judgment. Perhaps what was most special about Ken is that he was a 100% patient advocate and always made patients feel at ease with this combination of wit, intelligence, and caring.

From the time I initially met Ken until his most recent visit to Orlando, I was blessed to spend many hours enjoying life with Ken. Ken made me laugh. He had an incredible smile, a sense of humor, and found the good in everything he touched. Ken lived life to make others enjoy life.

I miss Ken already, but every time I think of him I will smile because he always made me smile.

Matt L. Leavitt, DO

I was in shock when I learned that Kenny had passed away. I still remember when Matt introduced us in the San Francisco office back in the early 2000s. We immediately bonded, discussing his interest in adding hair restoration to his plastic surgery office and talking about the many issues involving hair loss. Kenny was an MHR fellow and we would see each other frequently at MHR, ISHRS, or OLSW meetings, having dinner or sharing conversation during the events.

We had invited him to join the OLSW Faculty and he finally accepted, contacting me in his humble and honest way: “David, I would love to be part of the OLSW Faculty and I would like to present something. I don’t know what topic to present or how I can make the PowerPoint presentation.”

We exchanged emails several times and I suggested the topic, “How to Include Hair Restoration into Your Cosmetic or Plastic Surgery Practice.” Kenny loved the idea and was very excited to share his experiences and lecture at the OLSW Basic Course. It was a great experience for him and all of those that participated. He frequently thanked us for the opportunity, but we were grateful to see another side of our friend: his personality as an educator.

The perfectionist that he was, Kenny asked to come back as faculty for the OLSW the following year. His presentations were always transparent, humble, and helpful. He would present to us what worked and what hadn’t, allowing new doctors to learn from his experience. He was a very caring doctor with his patients and his professional life was dedicated to excellence in plastic and hair restoration surgery. He will be missed. Rest in peace.

David Perez-Meza, MD

I know that all those who knew Dr. Kenneth Siporin are deeply saddened to hear that he has passed away.

On a personal level, I cannot even begin to express the pain in my heart I now carry since the passing away of my dear friend Kenny. Since the day we met at the ISHRS conference in Puerto Vallarta, Mexico, in 2001, there was a special bond between us. Kenny was a very unique individual who loved life, adored his friends and family, and always had a strong desire for helping others, including all of his patients.

We spoke several times a week about everything from how our medical practices where doing, concerns for each other’s families, and when the next time would be that we could meet up at a conference or vacation. He was the funniest person I had ever known, and I will continue to think about him every day.

Kenny had many hobbies but was very passionate about traveling to new places, music, and surfing.

Even when experiencing tough times, he always put a positive spin on things. He had an uncanny ability to make others feel good about themselves.

I hope that with time I will learn to cope with Kenny not being here physically, but I know that I will never forget him.

Glenn Charles, DO



Dr. David Perez-Meza (L) and Dr. Matt Leavitt (R) with Dr. Ken Siporin (center)

Dr. Kenny Siporin on the surface was a highly accomplished facial plastic and hair transplant surgeon. He was hand-picked by Dr. Matt Leavitt to join the Medical Hair Restoration group.

Over the years, I heard reports related by the younger hair techs of the cool doc in California, who listened to hip hop during surgery. I always enjoyed catching up with Kenny at the yearly ISHRS conferences. I told him that sometimes with so much information bombarding me all the time, I felt like I had ADD, and he replied, "Yes, me too; but isn't it great for surgery?"

We became Facebook friends, allowing us to stay in touch and make an occasional comment on each other's post or wall. Last year, at the San Francisco ISHRS, meeting Kenny gave me a "man hug" when we ran into each other in the hallway.

I clearly remember a lot about Kenny, as his many grief-stricken friends and family called him, since his passing. He travelled to Central America to perform needed but Pro Bono surgeries. Kenny, at 51, had not lost his "cool," he continued to live life bold—surfing and still listening to Tupac. We all hear the bell tolling and indeed it tolls for us!

Bernardino Arocha, MD

I had the pleasure of spending a day with Kenny on a tour of Napa Valley during the last ISHRS meeting. It was a delightful tour with my colleagues, but most importantly it was Kenny's charm and sense of humor that made the trip memorable. If I could sum it up, Kenny was always looking for the fun in life. When I look at pictures from the tour, I am reminded what a funny, charming guy Kenny was. He taught us all to keep life in perspective and to have a great time any chance we get. I am honored to have learned from him.

Ricardo Mejia, MD

Ask anyone about Kenny and they will all say the same thing: "What a great guy! Always smiling, enjoying life, and willing to do anything to help out a friend." As a surgeon, Kenny was talented and compassionate. He was taken from us far too early. Kenny will be missed by his family, friends, patients, and all those who came in contact with. I am glad that I can call Kenny both a respected colleague and a friend. I will miss him.

Craig Ziering, DO

Dr. Siporin was a caring doctor and wonderful person, but above all, he was a great friend. He always had a way to make a bad situation better and always made things seem funny. He will forever be in our hearts!

Thiago Talpo, Hair Technician

Working with Dr. Siporin was always a pleasure because he was so much fun and knowledgeable at the same time, I learned a lot from him. It is so sad that such a wonderful person left us too soon. I will miss his jokes, his energy and his music! Dr. Siporin, we miss you…

Marina Diaz, Hair Technician

Classified Ads

Hair Transplant Surgeon for NYC

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Interested candidates, please send your CV and cover letter to
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Wanted: Hair Transplant Surgeon

Searching for a Hair Transplant Surgeon to assist our patients in the Fort Myers/Naples, Florida area. Must specialize in the FUE and FUT methods, be licensed to practice in Florida and willing to travel to our clinic 1-2 weeks per month.
Compensation: Dependent on Experience
Please call: 239-963-4780

Fellow of the ISHRS (FISHRS)

After several years of consideration by the Board of Governors followed by ratification by the membership of the International Society of Hair Restoration Surgery (ISHRS), the designation of Fellow has been established in order to recognize members who meet its exceptional educational criteria. In order to be considered, the hair restoration surgeon must achieve a specific level of points in a system of various educational parameters such as serving in leadership positions, American Board of Hair Restoration (ABHRS) certification, writing of scientific papers, and/or teaching at scientific programs, among others.

It is a great honor for a member to achieve the Fellow designation of the International Society of Hair Restoration Surgery (FISHRS). This recognizes the surgeon who strives for excellence in this specialized field. To maintain this status, the surgeon must continue to meet established educational criteria over time. Fellows may vote and hold office in the Society, and they may use the ISHRS Fellows logo on their websites and in other promotional materials.

We encourage all Physician Members to consider applying for Fellow status.

Qualifications and process can be found in the Members Only section of ISHRS website at:
http://www.ishrs.org/members-only/ishrs-fellow-category

Congratulations to the first class of FISHRS! *As of October 23, 2013*

Mohammed A. Abushawareb, MBChB, FISHRS
Ji-sup Ahn, MD, PhD, FISHRS
Bernardino A. Arocha, MD, FISHRS
Fernando Basto Jr., MD, FISHRS
Robert M. Bernstein, MD, FISHRS
Scott Boden, MD, FISHRS
Patricia Cahuzac, MD, FISHRS
Timothy Carman, MD, FISHRS
Ivan Cohen, MD, FISHRS
Paul Cotterill, MD, FISHRS
Jean Devroye, MD, FISHRS
Mark DiStefano, MD, FISHRS
Vance Elliott, MD, FISHRS
Edwin S. Epstein, MD, FISHRS
Bessam Farjo, MBChB, FISHRS
Nilofer Farjo, MBChB, FISHRS
Cary Scott Feldman, MD, FISHRS
Shelly A. Friedman, DO, FISHRS
Vincenzo Gambino, MD, FISHRS
John D. Gillespie, MD, FISHRS
Robert Haber, MD, FISHRS
James A. Harris, MD, FISHRS
Kenichiro Imagawa, MD, FISHRS
Francisco Jimenez, MD, FISHRS
Sheldon Kabaker, MD, FISHRS
A. Arthur Katona, MD, FISHRS
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Dae-Young Kim, MD, PhD, FISHRS
Russell Knudsen, MBBS, FISHRS
Grant F. Koher, DO, FISHRS
Jerzy Kolasinski, MD, PhD, FISHRS
Malgorzata Kolenda, MD, FISHRS
Samuel M. Lam, MD, FISHRS
Young Ran Lee, MD, PhD, FISHRS
Robert T. Leonard, Jr., DO, FISHRS
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Melvin Mayer, MD, FISHRS
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Peter J. Nyberg, MD, FISHRS
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Carlos J. Puig, DO, FISHRS
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Wen Yi Wu, MD, FISHRS
Kuniyoshi Yagyu, MD, FISHRS
Craig L. Ziering, DO, FISHRS



ISHRS 22ND ANNUAL SCIENTIFIC MEETING
Shangri-La Hotel Kuala Lumpur

IMPORTANT NOTICE

Relocation of 2014 Bangkok ISHRS Annual Scientific Meeting

We have canceled the Bangkok annual meeting scheduled for November 2014, and we have relocated the 2014 ISHRS Annual Scientific Meeting to Kuala Lumpur, Malaysia for October 8-11, 2014.

This decision was made because of the increasing political unrest in Bangkok and recent outbreaks of violence resulting in multiple injuries and deaths. Thirty-four countries have issued travel alerts for travel to Thailand, particularly to Bangkok. Hong Kong has issued their highest “black level” alert warning their citizens not to travel to Bangkok.

The February 2 elections in Bangkok did not resolve the problems. The country of Thailand issued a 60-day emergency decree. Some felt the situation will be fine by the time of the November meeting. Others felt there is instability and high risk for personal safety.

Now and in the coming months are when members make the decision of whether to attend, submit an abstract, make travel arrangements, etc. As such, we could not wait on this decision. Because the safety of our meeting attendees is of the utmost importance, we felt this was the prudent decision.

It is a shame because we really wanted to hold the meeting in Bangkok—such a beautiful and interesting city. We do hope to bring the ISHRS Annual Scientific Meeting to Bangkok perhaps in 2019, which is the next time the ISHRS annual meeting plans to rotate to Asia. In 5 years’ time it is the hope that everything will be back to the usual peaceful state.

In any case, we are thrilled to bring the meeting to Kuala Lumpur. Please mark your calendars and plan to attend!

Thank you and sincere regards,

Vincenzo Gambino, MD, President
Victoria Ceh, MPA, Executive Director
International Society of Hair Restoration Surgery



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Dates and locations for future ISHRS Annual Scientific Meetings (ASMs)

2014: 22nd ASM
October 8-11, 2014
Kuala Lumpur, Malaysia

2015: 23rd ASM
September 9-13, 2015
Chicago, Illinois, USA

2016: 24th ASM
October 2016
Central America (TBC)

INTERNATIONAL SOCIETY OF HAIR RESTORATION SURGERY

HAIR TRANSPLANT forum INTERNATIONAL

Advancing the art and science of hair restoration

Upcoming Events

Date(s)	Event/Venue	Sponsoring Organization(s)	Contact Information
May 20-23, 2014	University Diploma of Scalp Pathology and Surgery *Paris, France*	University of Paris VI *www.hair-surgery-diploma-paris.com*	Tel: 33 (0)1 + 42 16 13 09 *sylvie.gaillard@upmc.fr*
May 21-24, 2014	5th Brazilian Meeting of Hair Restoration Surgery *Maresias Beach, Sao Paulo, Brazil*	Brazilian Society of Hair Restoration Surgery (ABCRC) *www.abcrc.com.br/congresso*	Arthur Tykocinski, MD, Program Chair *arthur@cabelo.med.br*
June 13-15, 2014	ISHRS European Hair Transplant Workshop *Brussels, Belgium*	International Society of Hair Restoration Surgery Hosted by Jean Devroye, MD	*www.European-Hair-Transplant-Workshop.com* *workshop2014@drdevroye.com*
June 26-29, 2014	XV ISHR International Meeting: Advancing in Hair Restoration *Siracusa (Sicily), Italy*	Italian Society of Hair Restoration Hosted by Franco Buttafarro, MD & Pietro Lorenzetti, MD	*lorenzettipietro@virgilio.it* *francobuttafarro@gmail.com* *www.ishr2014.com*
October 8-11, 2014	22nd Annual Scientific Meeting of the International Society of Hair Restoration Surgery *Kuala Lumpur, Malaysia*	International Society of Hair Restoration Surgery *www.ishrs.org*	Tel: 1-630-262-5399 Fax: 1-630-262-1520
October 23-26, 2014	6th Annual Hair Restoration Surgery Cadaver Workshop *St. Louis, Missouri, USA*	Practical Anatomy & Surgical Education (PASE), Center for Anatomical Science and Education, Saint Louis University School of Medicine In collaboration with the International Society of Hair Restoration Surgery *http://pa.slu.edu*	*http://pa.slu.edu*
November 23-24, 2014	19th Annual Meeting of the JSCHR *Okayama, Japan*	Japan Society of Clinical Hair Restoration (JSCHR) Hosted by Shinsaku Kawada, MD	Shinsaku Kawada, MD, Program Chair *kawada@kawada-keisei.gr.jp* *www.jschr.org*
December 5-6, 2015	20th Annual Meeting of the JSCHR *Kochi, Japan*	Japan Society of Clinical Hair Restoration (JSCHR) Hosted by Ryuichiro Kuwana, MD	Ryuichiro Kuwana, MD, Program Chair *der-r-kuwana@mte.biglobe.ne.jp* *www.jschr.org*